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KOREA AND THE KOREANS: IN THE MIRROR OF THEIR  
LANGUAGE AND HISTORY.

A LECTURE BY

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LADIES AND GENTLEMEN: The lecture on Korea and the Koreans, to which you are to listen this evening, is not a narrative of personal adventure. Let me at once state the fact that I have never, on foot or horse, in flesh and blood, been inside the boundaries of the Peninsular Kingdom. My explorations have been in the history, language and art of this people and country, which stand between China and Japan, supplying the link of relationship in the chain of "the three countries." What I tell you to-night consists of the answers which I have received in talking to living Koreans in the United States and Japan, and even more by inquiring of those who have been dead ages or decades ago. Most of my notes have been taken while exploring that great treasure house of thought, that gallery of photographs of mind which has been slowly formed in the evolution of the centuries,—the Korean language.

Doubtless this confession will be a source of disappointment to some of you. Yet, when I read the latest books on Korea and the Koreans and articles just damp from the press, and when I peruse the letters of visitors to or correspondents living in Seoul, and find so little of real information, I am not so much dissatisfied with my own method of inquiry. When I see in the tourists' publications pictures made by and bought from the native artists, which the foreigner does not at all understand, I feel that his text is far below the pictures, and that old records and word-photographs are not to be despised. The tourist and traveller, on foot

or pony's back, gives his *impressions*, but these do not and cannot explain the people or their life, or show, for example, the causes of the singular political and moral weakness of the Koreans, who are physically among the finest peoples in Eastern Asia. To the passing visitor, also, the national art, religion, beliefs and literature, are as sealed scrolls. What astonishes me in the new books and letters from Korea (for the scholar and long resident has not yet written) is the vast amount of darkness that still enswathes the tiny lanterns which the travellers seem to carry. Nevertheless, let us be thankful for such light as we can get.

When, however, we question the ancient and mediæval records, when we hold up the mirror of language, when we study Korean art, we see how one explains the other, and each throws light on all. Though we may never have lived in the land of clean clothes and filthy habits, or walked in the undrained streets, or stumbled along the alleged roads, we may get, within certain limits, a few clear ideas about Korea and the Koreans. Such ideas as I have obtained you will allow me to present before you this evening, to be further illustrated by the stereopticon pictures made from photographs taken on the soil, or from genuine objects of native art.

As in married life, when one man and one woman have lived together in love and harmony during many years, they come to look like each other, so a people long dwelling upon the soil of a country resemble in temperament and character the land they inhabit. In a true marriage between country and people there grows up a likeness, and there is found a subtle harmony which is not easily disturbed. So true is this, that it is next to impossible for a new man from Christendom to penetrate the motives or forecast the action of the eastern Asiatics. Captain Sherard Osborn, R. N., when asked what a Chinaman would do in a certain case, answered: "Make up your mind as to how an Englishman might act under the circumstances, and then consider that a Chinaman would do exactly the opposite." Whether we are willing to acknowledge it or not, climate, soil, air, food, and all natural influences combining with hereditary bias, make the man what he is in spite of himself at the moment. It is only when the impact of ideas from without is further re-enforced by powerful mental initiative and a determined will that the old crust of ideas and routine is upheaved and broken through. Something like this has already happened in Japan; something like this (while we are waiting to see it fully manifested) has probably already begun in Korea.

This marriage between people and country and the subtle likeness and harmony thereby produced are manifest at once in the case of the Hebrews and Palestine; in that of the Arabs in the deserts or cities; as between the Dutch and their dyke-land; and in the instance of Japan and her people. The student of the languages and history of these peoples feels this harmony of nature and man as keenly as does the lover of music when skilful player and well-attuned instrument come together.

In no country, more than in Korea, is the image of the character of the people in the mirror of their language and history more clear. The great landmarks of nature are reflected in the national temperament with a sharpness of outline like that of mountain peaks upon the unruffled surface of the lake within the crater-bosom. A study of that language in its details enables us to read therein the main features of Korean history. Even had we not the literary records before us, we could construct in bold outlines and in rich coloring the national story. Furthermore, a knowledge of history gives the key to art. A survey of the records explains in great measure the awful poverty of the people, their backwardness in civilization, and the fact, which to my mind seems undoubted, that the Korea of to-day is a retrogression from the Korea of the Middle Ages, and that her civilization was greater a semi-millennium ago than in the year 1894. In this latter year, the Old Korea of isolation, degradation and hermit-like seclusion, passed away, while the New Korea of independence, nobler development, and a world-touching national life began A. D. 1895.

Looking into the mirror of language as read not only in the literature, so far as we know it, but especially in the geographical names, in the proverbs and idioms of the people, and in the rich vocabulary of the language, as set forth by Japanese, French, English and American scholars, we see looming up the great political influences, the natural landmarks, the creatures of earth, air and water, and the invisible influences which shape belief. We see that in origin the people of this peninsula are made up of many races, which in the early and unwritten ages struggled for mastery. Here is the picture which language gives: men out of the north, living under feudal forms of government in the great plains and valleys of Manchuria, gradually move southward. They have in these early eras very much the same domestic animals that are found to-day south of the Ever White Mountains. The pig, besides being a favorite source of food, furnishes also the material for cosmetics. The horse is rather a pony, reminding one more of a

Newfoundland dog than a Normandy beast of draught. The serpent is a creature both honoured and worshipped. The tiger is the great enemy, mightily influential both in reality and in imagination, but also the educator of man in valour and vigilance. The love of dancing, music and hilarity is strong. Etiquette, rude though it be, is as important for the dead as for the living. Banners, bells and gongs please the eye and ear.

Then rises the vast looming shadow of China. Toward the setting sun is a great and mighty Power,—a State in which there are not only cities and cultivated farms, the riches of a long civilization, but books and learning. There are also mighty men of culture, and their intellectual keenness and penetration surprise the rude people among whom, as trader, voyager, colonist, or political master, the Chinaman comes. At some time in the remote past (the Koreans and Chinese both claiming the date to be as early as 1122 B. C.) one of the ancestors of Confucius, Ki-shi, comes into a region which included within its sphere of influence a portion of what is now northern Korea, and thus the people were brought into direct contact with Chinese letters and civilization. Although the modern critical student refuses to accept as real history the traditions which the Koreans possess of this alleged founder of their social order, yet it is interesting to find throughout the region of Ping Yang, in the land-measures, in the customs of daily life, in the impress upon common speech, upon geographical names, and above all in the graven stone tablets, so many memorials of this Ki-Shi.

Twice the Chinese overran Korea and made conquest of the region north of the Ta-Tong River and west of the great mountain range. In the second century B. C., and again in the seventh century they conquered the region at this moment occupied by the Japanese armies and also the northwestern part of the Korean peninsula. From this latter century Chinese influence has been predominant throughout the north, especially, but also over the whole country. Roughly speaking, we may say that the northern half of Korea is in its language, ideas and procedure, strongly leavened with the Chinese civilization. Throughout all the national history there has been a strong element, often taking form in what might be called a political party, that has ever sought to cultivate the closest relations with the Middle Kingdom. The influence of China during the Tang and Sung dynastic eras was so close and powerful, that its impress on the native speech, language, literature and art of Korea is manifest at a glance.



On the other hand, there has always been in Korean politics a tendency toward more or less complete independence,—political, social and even literary. Roughly speaking, southern Korea is Japanese, or at least far more Japanese than Chinese in language, ideas and procedure; for the relations between the peninsula and the archipelago have been very close. Though sober criticism does not allow that the Japanese, in any true sense of the word, ever conquered all Korea, though research shrivels up into Lilliputian proportions the Brobdignagian story of the "conquest of Korea" by the Amazonian Empress, Jingu, yet it is evident that in the early Christian ages, if not before, the Japan Islands were peopled largely by a race of Asiatic highlanders who came from various parts of the Korean peninsula. Beside a very liberal amount of fighting at home among themselves, these islanders and peninsulars both enjoyed a good deal of warfare against each other on both land and water.

Exactly what a "pirate" is, or rather was, is not laid down in either the written or unwritten law of ancient times; but it is certain that the Japanese raid into Korea partook more of the nature of piracy than of devotion to science, or missionary zeal. Throughout the early centuries there was a pretty constant succession of expeditions from Japan into the peninsula, very much like those which are so frequent in the early history of Britain, when the Danes, Frisians, and that miscellaneous mass of Low Dutch people called "Anglo-Saxons" landed in England. Nevertheless the Japanese never overran Korea, or held the whole country, except once, and then only for a few months, in the great invasions of 1592-1597. Forced to retire southward before the combined armies of China and Korea, they remained for many months at points near the sea-coast, leaving their mark especially in the southern provinces. When finally they departed, they seem to have scooped the country clean of its art, its movable riches, and in general of its skilled artisans. While the Japanese thus left Korea blasted and barren, they enriched themselves and entered upon that splendid development of artistic and literary culture, which, after two and one-half centuries of assiduous care within, as it were, a walled garden, has burst into the full flower which surprises the world. After the Japanese came the Manchus, and poor Korea, made poorer and ground under an abominable system of government, has been a pauper among nations and the prey of at least two of them.

The mirror of language reflects in large proportion these constant political influences, the major from China, the minor from Japan.

History also tells us that beside these nationalities, various tribes and people out of the periodically-overflowing plains of Manchuria, and once the great hordes of the Mongols from the far north-west penetrated the peninsula, leaving more or less deposit of ideas and blood. Even the Arabs came and traded at the Korean ports. During the Japanese invasion, Portuguese also entered the country. In the seventeenth century two companies of Dutchmen, shipwrecked on the shores, lived inside of the peninsula during many years. From time to time the flotsam and drift from many lands found a lodgment on Korean shores. It is very certain that in this once hermit nation there is a mixture of many bloods. Almost every traveller has called attention to what I noticed immediately when meeting the Koreans who came to ratify the first treaty,—that there are several distinct ethnic types. Besides the dark-skinned labourers with “pudding faces” of uncultured aboriginal stock, the high-cheeked Manchu face, the round, plump features of the Chinese in the centre and north, and the figures and countenances closely resembling the Japanese in the south, the traveller is surprised at seeing faces of a pronounced Caucasian type. The thought of Aryan or at least Indian intermixture is more than a suggestion, when the undoubted affinities between the Dravidian languages of southern India and the speech of Korea are remembered. While there is a large Chinese vocabulary (which, however, does not affect the syntax of the language), and while in structure, the Korean and Japanese are so much alike, as to suggest twin brothers that were once hardly distinguishable infants lying in the same cradle, yet this subtle resemblance between the ancient languages of India and the speech of Korea is more than accident.

The Korean language, in its vocabulary and idioms once exotic but now part of the garden of daily speech, and in a phraseology that is varied and striking, bears witness also to the great religious and civilizing influences that came in with Buddhism. This great civilizer advanced by a double path from both Tibet and China; it came also at different times and in various forms. The earliest missionaries brought the rudiments of simple Buddhism in the literary and doctrinal forms of what is called the Smaller Vehicle. History tells us this was as early as the fourth century. But from the seventh to the fourteenth centuries we can trace the importations of new fashions in doctrine, ritual and Buddhistic literature, which show also that the Koreans came to enjoy the grander outlook and the more fascinating splendours of the Larger Vehicle, with its brilliancy of imagination and captivating rhetoric.

Roughly outlining the history of the imported Indian faith, we may say that from the fourth until about the eleventh century, there was the missionary age of Korean Buddhism. Then, from that time until the end of the fourteenth century, we have its golden age of success, prosperity and mighty power. This is the era of mighty monasteries and nunneries, of splendid temples, when Sanskrit was studied; when more or less native literature was produced; when the living rock in mountain and boulder was sculptured into the forms of Buddhas, Bodhisattvas and saints; and when a knowledge of Buddhism penetrated even to the common people. For, one of the grandest inventions ever achieved in Korea was that of a true vernacular alphabet, one of the most perfect in the world, and founded not only on thoroughly rational but on accurately phonetic and linguistic principles. This alphabet of twenty-five letters—eleven vowels and fourteen consonants—enabled even the common people to read and write; while from Korea into Japan flowed a constant stream of missionary and civilizing influences. In Japanese Buddhist literature, Korea is "the Treasure-Land of the West."

In these halcyon days of Korean Buddhism pilgrims went clear beyond the Himalayas to visit the holy land of the faith and to bring back sutras, images and relics; while, on the other hand, pious pilgrims from India, "the land nearest Heaven," were received in great state at Sunto, which was then the Korean capital. Then, the site of the present Seoul contained, indeed, a city; yet not of lay dwellings, but of monasteries and nunneries, where thousands of monks daily chanted the sacred sutras and shastras. This capital of mediæval Korean Buddhism had, as documents say, a "myriad and nine" temples. There still stands, solitary and unhonoured, in Seoul, a white marble pagoda, once richly sculptured, now defaced, and rising from surroundings of squalor. It is the eloquent witness to the scholar of the bygone days of a once national religion. The most striking monuments of art and of the old religion are the *mir-yeks* or "stone men." Throughout the country, sometimes rising out of a plain in a mass of white granite that reminds one of a lighthouse; sometimes at the edge or on the spur of a mountain range, lichen and mossy with centuries of neglect; sometimes found even in forests and claiming kindred of oblivion with the giant trees that for centuries have not felt the axeman's touch, are the colossal sculptured figures of Buddha. These images, which, though occasionally in pairs and representing the dual, or male and female principles which Chinese philosophy sees

dominating the universe, were reared by Buddhists. The most ancient or male image is that of the Maitreya or Messiah Buddha—the Buddha to come. The second or female figure has been, in each case, probably added much later, after the prevalence of Confucianism. By and bye Buddhism, instead of being, as at first, an aggressive missionary force, resolutely conquering its way by faith and sacrifice, lifting up a light to guide and inspire, and becoming the Salvation Army for the lowly and the ignorant, waxed fat and gross with kingly favor and royal patronage. Then its decay began. It was already dead, of atrophy of the intellect and fatty degeneration of the heart, even before the sword of the soldier, to the charge of treason, added decapitation. Buddhism was, as a system, in 1392, not only disestablished but it utterly waned as an intellectual and moral power. Seoul, the city of monasteries, was obliterated as such and made the royal residence and capital. It is less “the Paris” than the Hague of Korea, since the name means literally, the hedge or palisade. The priests were prohibited from entering walled cities and were reduced to a sort of clerical militia, who held their monasteries and garrisoned fortresses at the king's pleasure. Their very existence depended upon their subservience and cringing obedience.

Nevertheless it must not be forgotten that the awful poverty and devastation which Buddhism in the peninsula to-day shows, was in considerable measure the result of the Japanese torch and hammer. For to the war of 1592-97 there was added not only the bitterness of the hostile invader, but also the iconoclastic bigotry of the Japanese Christians who so numerous composed the invading army and took their cue from friars who looked to Philip II. of Spain as a shining Christian example. Steeped in ignorance and cut off from all vitalizing touch with their fellow-religionists, the priests of Korean Buddhism have sunk to the lowest degree of what may, in a strain of exaggeration, be called religion.

The average Korean's religiosity is one that is made up of a mixture of the Confucian ethics, the dregs of Buddhism, and, more than either, the indigenous demonolatry. Fetichism, with its charms, amulets and spells, rules from the palace to the rice field. Shamanism, with its crowds of geomancers, horoscopists, fortune-tellers, locators and removers of tombs, and answerers of questions to the gullible, is omnipresent and rampant. Even their distance-posts or boundary-figures are carved into grotesque resemblances to the human face and head, with probably a Shamanistic reference to the land spirits. From the Ever-White

mountain to the island of Quelpart, the poor superstitious people are constantly under the tyranny of those who pretend to propitiate the spirits of earth, air and water, and the myriads of invisible beings that jostle each other in their chronic determination to work harm to mortals. In no country is there a larger menagerie of mythical zoölogy. In the region of water beneath there is every sort of dragon and of malevolent, slimy or scaly creatures such as no naturalist has ever yet captured for his museum. Besides the tiger, the serpent and the various specimens of hooved, horned, clawed, beaked and winged creatures of reality, there is every imaginable specimen of mythical composite. The scars on the Korean imagination are long and deep. The student is constantly reminded of the oriental proverb, "Blow away the hair and you find a gash." The missionary, with his belief in one true God, must rout these hosts of darkness; but the man of science must be his companion and aid. Already in Japan the church and the school-house have perceptibly removed the incubi and driven off the nightmares. What Korea wants is the same light and truth which, in place of the *delirium tremens* of Paganism, will bring health, wealth, strength and soberness.

Dominant through all the ages, since its first introduction in the early Christian centuries, has been the Chinese ethical system. This furnishes the Korean with his daily rules of conduct. It is interesting to note the philosophical and doctrinal evolutions of Confucianism. In Korea, as well as in its old home, China, and in Japan, Confucianism was first a simple system of ethics built upon the etiquette of the ancestral sacrifices; but, as cogitated and manipulated by the Chinese schoolmen of the Middle Ages, it became a remarkable philosophical system, in some phases agnostic, but in its general trend pantheistic. In Japan, Confucianism has had remarkable local developments and adaptations, which have changed it at some points very strikingly as compared with the Chinese norm and forms. In Korea this system of ethics and metaphysics has been developed noticeably by critical students and commentators, so that it is among certain learned classes, "a pantheistic medley"; but with the Koreans generally it may be said that Confucianism, besides furnishing ethics and philosophy and a substitute for religion, as we understand it, has become a system of political economy. It may be safely said that though differing widely in both method and object, the struggles, during the past decade, of the anti-Japanese and anti-progressive party of the Min clan at court, and those of the Tong Hak (Eastern Culture)

rebels in the south, are based on the same ideas. The former sought to get and keep all political power, office and spoils. The self-styled Tong-Haks, or Eastern Civilization Party of insurgents, whose uprising (through the necessity of military force to subdue it) brought on the present war, believe in the old order of things. Both the Min nobles and the Tong-Hak peasants are ultra-Confucianists, who have sought to prevent the modernization of Korea by a fresh assertion of the Chinese ethical system as they understand it.

These importations of religion and of political influences from Japan and China have been as so many new horizons widening the Korean vision and giving it new range. Yet besides things political and religious, let us glance at some of the great elements in social and material progress which language and history reveal. It was a great gift to human comfort when cotton was introduced into the peninsula, furnishing a new material for dress and even for the armor of the soldier. Thus far, the Koreans have preferred to wear the woven material in its undyed form. The unique spectacle is presented of a whole nation dressed in white, and of people looking as though night had been turned into day and somnambulists had not yet exchanged their sleeping clothes for the garb of work and of outdoors. This bleached costume is but an index of the attitude of the people at large who are still asleep or in dreams, while all around them the world has awakened. Even the Chinaman who visits the streets of Seoul sees in the fashions of dressing both the hair and the body the mirror of customs long abandoned in China.

Less certain in its benefits to the Korean people was the introduction of tobacco, through the Portuguese, Spaniards and Japanese of the sixteenth century. To the habitual and temperate user of tobacco, no doubt, any world which knew not the soothing influence of this weed, must have been a dark one; and to the holder of such a creed the advent of tobacco seems like the discovery of a new continent of physical pleasure. However this may be (the lecturer being personally heterodox on this subject) the Korean eschewing, but not chewing, the leaf in its solid form, nor inhaling it in powder, clings to the use of the weed in the pipe alone. As in his own dwelling he builds a *kang* or system of flues extending laterally from end to end, having a furnace at one end and a chimney at the other, through which smoke and heat pass, so the male human being makes a *kang* of himself. About four feet from his mouth he builds a tiny brass furnace which he charges with fuel



from the tobacco plant. At the other end, he pulls most industriously in order to make a draft, using his mouth and nose as bellows and chimney. The quantity of tobacco which the average male will get through with is prodigious. The favorite attitude of the smoker is the squat, his face having a peculiarly vacant expression during his absorption in this Nirvana of smoke. Furthermore, his teeth which are usually strong and white are made the machinery by which he supports the weight of the long cane stem, tipped as it sometimes is with jade. When not making a chimney of himself, he thrusts his pipe down his back behind the collar; or, if he is a soldier, he uses his Remington, Winchester or fire-lock for a pipe case.

The Korean dress has no pocket in it, neither has it any buttons inside or out. It is kept together with strings or by the mere force of gravity. Whatever receptacles may equip the person, for the keeping of official commissions, seals, the provender for smoke, tools, money, or what not, are in the form of bags suspended from the waist. While outwardly, the clothes may be white, in the case of the upper classes, and of an uncertain tint which hovers around or approaches gray, in that of the lower classes, inwardly the Korean is not quite as "all glorious" as the king's daughter. The Korean language, to say nothing of reality, suggests neither soap nor lye, nor is there a simple word, as in Japanese, meaning hot water or bath tub. Cynics say that the Korean is washed only twice in his life,—when he is new born and when he is a corpse, but this is probably a foreigner's exaggeration. Nevertheless it is to be wished that in a country so liberally provided with animal and vegetable fat as is Korea, the soap factory may soon be a permanent institution. Very probably when godliness becomes more common, its next door neighbor, cleanliness, will not be absent. It is certain that one of the new horizons needed by these people, so long hermits from the world, is the conception of the benefits and value both of physical and moral purity. The language itself, apart from what missionaries and long residents tell us, shows the awful prevalence of horrible diseases, which can be and ought to be checked and controlled, and explains why Korean families are so small and why the awful mortality among infants is so great. In a word, language, history, and the multiplying reports of eye-witnesses all agree that Korea and the Koreans present to-day a picture similar to that of Old and unreformed Japan prior to the coming of the forces of western civilization and Christianity. The tremendous manifestation of energy in that re-birth of modern

Japan, which dates from 1868, is, let us hope, the prototype of the Korea to come. Despite her long humiliation and hermit life, the fact must not be forgotten that this people gave Japan much of her civilization. Furthermore, Korea is the only nation in the Far East that has produced a true alphabet. More glorious than all, Korea is the home of true printing, the place of the invention of movable types. Long before Gutenberg or Coster the Koreans printed books with separate and distributed type made of copper. Probably the Mongols brought this Korean invention into Europe.

We might dwell further upon those reflections in the mirror of language and history which show how the mountains, the rivers, and the ocean have influenced the Korean imagination and moulded history and life. We could illustrate, with proverb and idiom, the part which the tiger and leopard on land, and the monsters of the water, have played in stimulating and developing the Korean man, his rhetoric and his art.

It would be easy to show especially how the language reveals the lack of personality in Korean. In common with his brethren of all that part of Asia dominated by Chinese culture, the Korean suffers from deficiency of self-revelation and consciousness. He has not reached the stage of intellectual development in which he is able to draw a clear line between mind and matter, Creator and creation, the living being and the inanimate object. He does not personify, he has very little metaphor. He knows little of that gorgeous imagery and the profuse and extravagant tropical language, which we associate with the word "Oriental," and accurate with the paradoxical *western* Orient. Like the Chinese, the Korean's language and literature are intensely matter-of-fact. The best of his literature, even his poetry, is descriptive; his written history consists almost entirely of annals; there is hardly any such thing as portrait painting and no sculpture which can compare with that of any European nation. This impersonality of conception which has so feeble a grasp of the distinction between mind and matter, or between the individual and the multitude, is manifested in every department and product of the national intellect. In grammar there are no pronouns, but an amazing number of honorific words, while so little formal logic is exhibited in the language that one could write a book as big as Macaulay's "History of England" or Gibbon's "Decline and Fall of the Roman Empire" *in one sentence*,—so many and so necessary are the Korean conjunctions. In a word, here is a country and people where mental initiative was long ago practically lost, where originality was

swamped by too slavish dependence upon China, where the original poverty of mind and dearth of ideas has been almost petrified, so that to-day the Koreans are a people intellectually comatose and morally semi-paralyzed.

Yet in such opinions and judgments we must not go to an unreasonable extreme, and especially must the American take lesson and warning from the average British tourist, book-maker and politician. There is a wonderful family likeness about English books on Korea; for, to the man to whom "British Interests" is a religion, the only orthodoxy concerning Korea is that she is hopelessly corrupt and can only save herself by adhering to China, which is, after all, only a British opium-shop and a place for the sale of Manchester shirtings, and possibly a scrap of the earth which at some future time will, like India, become a part of the British Empire.

The American, however, sees differently. From the first, both the individual, and the United States Government have believed that there is hope for Korea, and that she is and ought of right to be, independent. Neither American missionary, traveller, diplomatist nor statesman, believes that the case of the peninsular kingdom is hopeless; but, that even as Japan saved herself through American influence from becoming an India and seems able to work out her own salvation, so, measurably at least, despite her unfortunate geographical situation and interior limitations, Korea can live and thrive by working out her national genius and destiny. Her age alone demands respect. The benefits which she has conferred in past ages upon Japan deserve recognition beyond that of mere sentiment. Furthermore, the actual facts of recent years seem to point as surely to Korea's ability to win and hold an independent place in the world's history, as surely as the shadows of the sunset point toward the sun rising. Let us see.

Unquestionable as has been the awakening influence upon Korea of the march of events in great China, yet we have reason to believe that even more influential in stimulating to new life has been the advent of the Americans in what is England's "far east" and our "far west." When, in 1853, Perry's Armada of western civilization mirrored the stars and stripes on the waters of Yedo Bay, that peaceful evening gun fired from the *Mississippi's* deck at nine o'clock of July 7th, 1853, was the requiem of Old Japan. The hail and welcome from the sunrise gun of July 8th, was a salute to the rising sun of New Japan. The firing of that unshotted Columbiad, symbol of America's peaceful conquest of Japan, by

means of the missionary, teacher, engineer and adviser, was also heard in the hermit peninsula. Five years later, a victory even grander than Perry's was achieved by Townsend Harris, when the once hermit country was opened to foreign trade and residence. Then began that ferment of ideas and quickening of movement which in fifteen years made feudalism a dream and opened the fresh morning of the long bright day of New Japan.

This splendor in the near east dazzled also the watchers on the high peaks of Korean observation. For, while in the Hermit Land of Chō-sen the mass of humanity was like the traveller amid snow and glaciers, who half blinded and frozen has yielded to the sleepy delight of insensibility and approaching death, yet there were, as in Old Japan, a few inquiring spirits earnestly awaiting and looking for signs of the dawn. These Koreans loved their country with a fierceness of patriotism that, besides having in its elements of selfish greed, would stop at nothing congenial to their code of morals, whether assassination, palace-seizure, or abundant bloodshed, to carry out their ideas. As no stream rises higher than its fountain, it would be idle to expect that the regeneration of a nation steeped in moral corruption could proceed in angelic or saintly ways, or without those bloody revolutions which are so common even in the history of Christendom. Nevertheless, with all their faults, which are many and great, we believe that those who in 1884 tried, by such means as they were familiar with in their own history, to awaken their country and people to new life, were noble patriots, ranking, in motive at least, as high as the highest in Korean history. Knowing that while anciently there were many civilizations, but in these days of the world-nerves of steam, electricity and international law, there is but one, they determined at all hazards to have in Korea that one civilization.

So, while Japan was entering upon that career which has surprised the world (and which Americans recognized and welcomed as genuine, even before the Murata rifle had pierced the shell of Chinese conceit), two or three Korean young men were opening their hearts to each other concerning their country. They took long walks in the country, beyond those city walls which have ears, and safe from the spy lodged in floor or ceiling or with eyes glued to the keyhole. They discussed what should be done to save their country. One of them, Kim Ok Kiun, "violated the frontier" and crossed the seas to Japan. There, he saw an old world becoming a new one. He himself tried the virtues of leather boots and cloth trousers. He parted with his topknot

though only after tears and grief. He learned the comfort of felt hats, woollen underclothing and linen shirts, and thus found what good working clothes, with all their ugliness, those of the West are. He wore a watch and learned the preciousness of time. He saw the fairy-land of modern applied science and how the western men had tamed the dragon of steam and made wings of electricity, in a way that put to shame even the mythology of his native land. Coming back home he told others. Soon in Japan there were other hermits in the world's market-place. Little companies of Peninsulars got themselves inoculated with the anti-toxine of semi-European Japan, so as to be proof against further attacks of the Chinese virus or diseases; while all the time they were undergoing a kind of new birth that made them another sort of men. Their whole world of view was different. One of them was a noble of highest rank and of royal blood, and he, coming back to Seoul, was the first to boldly penetrate the king's presence and told him what he had seen in the new world beyond the sea.

What a story was that! to compare Old and New Japan, and study results was enough to make the head of a Korean king swim. Korea was a country eaten up with parasites. One-tenth of the population lived on the other nine-tenths. A great mass of lazy, non-tax paying, non-producing gentry called "Yang-ban" (civil and military), wanted to keep things as they were; that is, to let disease, ignorance, poverty and oppression run riot. They would prevent any motive in the laborer or farmer or trader to gain wealth or get comfort, let superstition run riot; keep out light and knowledge and press down and hold down the people under the awful incubus of Confucianism and the Chinese system, which meant permanent paralysis and ultimate national death through foreign conquest. Even more clearly than a Christian or a Hebrew, they understood the prophecy of the civilization of to-day, though they may never have read it,—“The nation that shall not serve shall perish.”

What a grand story that princely traveller from Japan told; of a multitude of jealous sections and principalities, once held to the semblance of order by a military despotism, now transformed into a united country, full of willing hearts and working hands; of a national army, navy, postal, educational, and light-house system; of horrible and destructive diseases, mastered, and held under the firm hand of science; of monopoly and privilege broken down; of the old classes of gentry now reduced to the rank of producers, and, instead of receiving stipends from the government treasury,

paying taxes and tolls; the army and military promotion open to every boy in the land; a system of public schools that, besides being open to every child in the country, added to their own native light the splendor of western knowledge; the land put practically into the hands of the actual cultivators; the courts open to all; the forces of the universe chained, harnessed and obeyed; the old barbarous customs of both peace and war, the exposure and murder of infants, the abominations and brutalities, inherent in the old codes imported from China, and all integral parts of feudalism banished forever; the national wealth trebling and quadrupling, and population increasing at a rate unknown in any previous history of Japan, new worlds of thought entered and a new spirit possessing the people; while up and down the country were men and women from the West who without money and without price were giving their lives to the teaching and the healing of the people and to the benefit of their souls and bodies—that was the story of New Japan.

This was what the Korean patriots coveted for their own land; but, how to bring about in Korea what was already visible in Japan; that was the question. The peninsular state and people had not enjoyed that interior preparation which Japan, in the profound peace of two hundred and fifty years, without foreign invasion had secured. Korea had not the benefit of the genius of an Iyéyasū, who began the new era of art, science, literary culture and investition, whose flower and fruit we now behold. Most of all, Korea had not had the benefit of a settlement of Dutchmen, who for two hundred years kept on silently but surely leavening with their words and thoughts, their books and their sciences, their medicine and their trade, the great mass of men in hermit isolation. How then, could these Korean patriots bring about reform?

Who can blame the revolutionists of 1884 for being Koreans, for following the precedents of centuries, for doing only what seemed possible to do? Better, we may say, the slow processes of the missionary and the teacher; but even these, as well as all foreign ideas, were under ban. The time-honored Korean way of effecting a change in government was to form a plot, have the conspirators meet near the palace, seize the person of the king, cut off the heads of opposing ministers and then issue the edicts of reform in the royal name. Is not this, or dynamite, the standard method in every country without representative institutions, and where the popular voice is repressed? Had not the Japanese done the same in 1868? Did not a few daring spirits seize the person of the emperor, and institute reform in his name? So they read Japanese



precedent and history. Why should a Korean hesitate? Would not the means sanctify the end?

So, after drinking deeply at the Japanese spring, and seeing, also, the wonders of America and Europe; after the American treaty had been signed and American ships took eager pupils around the world, the cosmopolitan Koreans came home,—the wax to be melted and the clay to be hardened in the same fire. One or two of the pro-Chinese Koreans who had gone abroad came home more Asiatic and ultra-Confucian than ever, determined to keep Korea as it was. They branded western progress as barbarism, and looked upon Christianity as vastly inferior to Confucianism. On the other hand, the Progressives, fully converted to the ideas of Christendom,—whether we call those ideas collectively Christianity or civilization,—resolved to lose no opportunity. Pretty soon they saw, or imagined they saw, that the “irrepressible conflict,” already begun when the American treaty was signed, required that the fire should break out which should bake the clay of conservatism into unchangeable terra-cotta and melt the wax for fusion into new forms,—perhaps for utter destruction, perhaps to be moulded into the model of a new Korea that should come to perfection under the statesman’s art.

So, resolving to kill rather than to be killed, and following out in perfection of detail the true Korean and old Japanese programme, they set in motion that revolution of 1884 which seems to be the pivot of Korean modern history. The order of procedure was, first, incendiarism; then assassination, on the evening of the opening of the new post-office; then the meeting at the palace; the seizure of the king’s person; the decapitation of the opposing royal ministers; the revolutionary edicts changing the customs of ages with a stroke of the pen; the fraudulent use of Japanese troops; collision and bloodshed between the foreign military, with victory resting with the overwhelming force of Chinese; a reign of Anarchy, while the American flag flew over the only refuge for the foreigner in Seoul; the flight of the little handful of deceived Japanese in the light of their burning legation; the absconding of the conspirators, and, for a time the settling back of things as they were, with a tremendous increase of Chinese prestige and power.

For nine years the Japanese Government gave to the Korean refugee Kim Ok Kiun the same asylum and protection which, under the laws of civilization, it gives to all foreigners. Finally in April, 1894, having used Japan as a ground of their barbarous

plots, the Korean assassins in government pay succeeded in decoying Kim away to Shanghai, and murdered their victim. Then, China, approving such ancient barbarism, sent home the triumphant assassin, where he was rewarded with honors, money and fame, while the corpse of the Kim Ok Kiun was dismembered and publicly exposed. A Chinese war vessel acted under approval from Peking, for both purposes as common carrier and express agent.

Thus there were added fresh elements to precipitate the already impending collision, between western civilization as represented by Japan with all the glow and fierceness of a new convert, and Asiatic barbarism as represented by China with all the tenacity of an old believer who conscientiously shuts his eyes to new light. About the same time, in the southern Korean provinces, whether as a local uprising of the people against chronic and unspeakable oppressions, or as a party stimulated and fostered by the pro-Chinese faction at Court, the Tong Haks lifted up the banner of revolt. Then the ultra-Confucianists in Seoul asked of the Chinese government military aid. In eager violation of the treaty of 1885, China dispatched her soldiers first and notified Japan afterward.

This last ounce broke the Japanese camel's back. The murder of Kim Ok Kiun had fired the popular heart. The action of China exasperated the Government. Resolving not again to be caught napping or to be outnumbered, withal irritated at the overbearing behavior of the Chinese representative at Seoul for years past, knowing that China was massing her forces on the frontier and storing up Japanese coal for her steamers at Port Arthur, believing that Li Hung Chang wished to precipitate a war for his own purposes, realizing that the independence of Korea was a necessity for the peace of the East, Japan hesitated not for a moment to cast down the gage of battle. What were numbers and might and vast resources when Japan had her quarrel just and her war was for civilization? When in 1872 she changed her calendar,—the oriental symbol of sovereignty in the giver and dependence, if not vassalage, in the receiver,—from that of China to that of Christendom, she understood fully the reasons for the outburst of rage on the part of the Chinese and their insolent turbulence. Turning from the ideas, literature, law, civilization of China and Confucius to that of Christendom, she knew that some day China would present the bill and demand payment; but when the reckoning was demanded, Japan, though no more ready than David was, went out to meet the Goliath of Asia. With the light but efficient equip-

ment of genius, young Nippon had moved out to meet the giant in the coal-scuttle helmet and heavy armor of prehistoric tradition.

We know the sequel. The Mikado's minister Hoshi Toru was dispatched to Seoul to demand a categorical answer as to whether Korea was independent, while General Oshima—once a peasant boy in Japan—with his mixed brigade accompanied the envoy. A skirmish in front of the palace demonstrated the superiority of Japanese valour and the Murata rifle. A military cordon was formed around the Korean Capitol. At Asan the Chinese power received its first blow. On the water, a transport, the *Kow-shing*, was loaded with Chinese soldiers. These poor men, victims of ignorance, were so far behind the times as not to know that Japan had adopted the rules of modern civilization. They flatly refused to surrender, not knowing that kind treatment and abundant rations would be theirs. Hence, according to the laws of all warfare, as thus far known, the men with arms in their hands who refused to surrender, were given quick death. On September 17, at the great battle of Ping Yang, the Chinese military power in Korea was utterly broken. At the beginning of October Korea was free of her old oppressors, for not an organized body of Chinamen remained on the soil. At sea, Japanese seamanship, skill valour and science, and all the qualities reflected in the mirror of Dai Nippon, won the day over the heavier guns, the thicker armour and the larger floating fortresses of China. The rest of the story of the war, in which Japan has conquered a territory twice as large as her own, broken down the fortress-barriers of the sea-way to Peking, and in which she has showed how useless it is now, as always, to expect that the battle is always to the strong, or that Heaven is always on the side of the heaviest battalions, you know well.

Meanwhile, these are great days for Korea; they are days of reconstruction and reform. The old Chinese system of government and social procedure has received its death blow. Already, under that statesman of marvellous constructive abilities, educated in Europe, and a true child of New Japan, Count Inōyū, true progress is being made. Beginning at the Capital, the king's palace is being cleared of eunuchs and an overgrown harem. The mighty mob of office holders and office seekers, ten times too large, is being lessened; appointment to office is to be according to ability and not on account of lineage. Provision has been made for a national army, navy, postal, railway, telegraph and light-house system. The ridiculous costumes and the methods of dress-

ing the hair are to be changed. The rigid sumptuary laws, heretofore obligatory, are to be repealed, and human beings are to have liberty in things little as well as in things great.

To sum up the reforms, without going into too much detail, we may say that the New Korea will rise according to the model of New Japan. The vast parasitic element will be removed. Those who preyed upon the body politic will become producers. They will have the magnificent privilege of earning their own living. Let us hope they will purchase for themselves a good degree. Every encouragement is to be given to the attainment of wealth, and every motive strengthened whereby industry may become habitual and general. Already we see in office the men whose abilities and acquaintance with the ideas dominant in the modern world fit them to be "builders of a better time." The exiles who have so long hidden in our country are now back in office and honour, and the future of Korea is bright.

Already, our own country, true to her polity of friendship that has in it no taint of the lust of conquest, has, both publicly and privately, played the part of kindness to Korea. Besides having the first foreign legation in Seoul, and accrediting as permanently resident the first Minister, it has had such representatives as Ensign Foulke, U. S. N., and Dr. H. N. Allen. A score or more of honoured missionaries, noble representatives of American culture and character, are already in Seoul and at the ports. Some of the most substantial buildings in the country are schools, hospitals and dispensaries—the gifts of American Christians—for the benefit of the Korean people. American missionaries, physicians and teachers were the first on the ground to heal and to enlighten. Already the best books on the language, the first churches organized, the first relief to the wounded in battle, and the first graves of the men who have sacrificed their lives in behalf of Korea, are of Americans, who outnumber all other religious and civilizing envoys from Christendom. Let us hope that as the Americans conquered Japan with peaceful armadas, unselfish diplomacy, and a whole army of missionaries and teachers, so also Korea will be likewise conquered by the people of that country, which President Arthur called the "Great Pacific Power." Further, may we not hope that in the settlement of the present war, the influence of the United States may, in the readjustment of the map of eastern Asia, be powerfully exerted to modify, if not to prevent, that scheme of systematic robbery of Asiatic people which has been so steadily proceeding during the centuries?

## THE MAPPING OF NEW YORK STATE.

BY

HENRY GANNETT.

In the mapping of its area, the United States is far behind the countries of Europe. This condition of things is strange in view of the fact that the settlers of this country came from the most highly civilized countries of Europe, where the need of maps has long been recognized, and where maps have been used for generations in planning improvements which involve a knowledge of the surface of the ground. Moreover, these settlers came to a country where everything had to be done to render it habitable, where towns and cities were to be built, where waggon roads, railroads, canals, means of water supply and all other modern conveniences which make a country fit to live in were to be constructed. A partial explanation of this neglect may be found in the division of responsibility between the State and the general government, whereby each has waited for the other to undertake the work. It may moreover be found in the fact that the only plans proposed, until recently, for making such a map involved so enormous an expense and so long a time as to deter our law-makers from undertaking such a tremendous work. Be that as it may, the fact remains that until some fifteen years ago there were no maps of any considerable part of the country which were at all accurate or serviceable, if we except certain parts of the far West which had been mapped rather crudely by the general government.

It is true that maps upon small scales had been compiled from various sources; in certain States such maps had been compiled from the subdivisional surveys of the General Land Office, and in other States from private surveys of one sort and another; but these maps are upon too small a scale to aid in engineering works, and indeed many of them are mere diagrams of roads without any attempt at representing relief, or even drainage.

Meantime, however, much triangulation had been done in various parts of the country by the States and the general government, but, except along the coast and in New Jersey, this had not been followed by the making of maps. The skeleton had been constructed, but it had not been filled out with flesh and blood.

Such was the situation when, in 1882, the U. S. Geological Survey commenced its map of the country.

While this was the case with the country at large, New York, the most populous and wealthiest of all the States and in some parts the most densely settled, has been quite as backward as any other portion of the country. Prior to 1888 there were no maps of any part of the State which were worthy the name. The only map of the State in existence, known as the French map, was made by private parties, was compiled mainly from subdivisional surveys made a century ago, and from traverses of the roads and railroads. It is little more than a diagram of roads. This was published on a scale of 1:300,000, that is, about  $4\frac{3}{4}$  miles to an inch, and practically represents all that was known of the State.

It was not from want of effort on the part of citizens or State officers that so little had been done. As long ago as 1827, Governor De Witt Clinton recommended the preparation of a map in a message to the Legislature, but the recommendation met with no response. Similar recommendations were made by Governors Hunt, in 1852, and Seymour, in 1853.

In 1875 the American Geographical Society became interested in the matter, and appointed a committee to study and report the condition of the maps of the State. Their report showed a very bad condition of things. It showed that the existing maps, made from these old land-parcelling surveys and by private parties, were as nearly worthless as possible, and recommended that the State commence a survey of its area. Largely as a result of this movement, the Legislature in 1876 passed a bill providing for a State survey, placing the work under a commission. Mr. James T. Gardner was appointed superintendent, and work was commenced in the following year. From that time until 1884, work was carried on continuously until it was stopped by the veto of Governor Cleveland in the year last named. During these eight years, primary triangulation only was done—no maps were made—and it was mainly on this ground that the work was stopped. The geodetic work of the U. S. Coast and Geodetic Survey in the valley of the Hudson River, and of the U. S. Lake Survey on the borders of the Great Lakes, furnished the base lines from which the State Survey extended triangulation into the interior. From the line Rafinesque-Helderberg of the U. S. Coast and Geodetic Survey, near Albany, triangulation was extended westward up the valley of the Mohawk as far as the western portion of Montgomery County. From the line Clyde-Victory of the U. S. Lake Survey, work was extended easterly and



thence southward to the Pennsylvania boundary. The work was carried on efficiently and economically, and was of a very high character, comparing favorably in quality with that of the U. S. Coast and Geodetic Survey and the U. S. Lake Survey. Altogether, 312 primary points and 400 subsidiary points were located, covering and controlling about one-fifth of the area of the State. The entire amount expended by the Survey during its existence was about \$118,000.

The work was executed with eight- and twelve-inch theodolites reading by microscopes, and was adjusted by the method of least squares. The quality of the work may be characterized by the statement that the mean error of closure of 200 triangles was but 2."02.

The U. S. Coast and Geodetic Survey, in the course of mapping the coast of the sea and navigable waters of the country, has extended a system of triangulation up the Hudson valley, across to Lake Champlain and along the shores of that lake. It has also extended a belt of triangulation from the neighborhood of Albany westward, connecting with the work of the U. S. Lake Survey near Buffalo. The high character of this work is too well known to need any commendation. The amount of map work executed by this organization is, however, limited. It has mapped Staten Island and the immediate shores of Long Island, the banks of the Hudson up to Albany, and the shore of Lake Champlain, the average width of the belt along the shore being but a fraction of a mile.

The U. S. Lake Survey has carried on triangulation in the neighborhood of Lakes Erie and Ontario and the St. Lawrence River, and has mapped their immediate shores, the strip of mapping being even narrower, on an average, than that of the U. S. Coast Survey. The character of the geodetic work of this organization is high.

For a number of years, from 1872 to 1884, there was carried on in the Adirondacks, partly at private and partly at State expense, a survey of that region, under Mr. Verplanck Colvin. Of this, very few results have been published. The positions of a few points, numerous elevations, and a few local sketch maps are, so far as the writer is aware, the only contributions which this Survey has made to a knowledge of the geography of the State. It is understood, however, that there is much matter collected by this organization awaiting publication.

With the exception of a few points determined by the U. S. Geological Survey, immediately for the control of its maps, the

above is a complete sketch of the triangulation executed in the State. This is represented upon a diagram of the State, Plate I, which shows that a large part of its area has been covered by primary triangulation.

This was the situation in the State when, in 1888, the U. S. Geological Survey commenced work there, in pursuance of its general plan of mapping the entire country. This plan contemplates the preparation of a map on scales of 1:62500 and 1:125000, or about one and two miles to an inch, the relief of the country being expressed by contour lines at intervals ranging from 5 to 100 feet. Under this plan somewhat more than one-fifth of the area of the country has been mapped.

The first work done in New York was in the vicinity of its metropolis, New York City, Brooklyn and their suburbs, and the result was the publication, shortly after, of four sheets, comprising the Greater New York. These four sheets, subsequently re-published in combined form, have been distributed by thousands. In subsequent years, the work was extended up the Hudson valley and into the Catskills.

Between 1888 and 1891 there had been mapped in New York by the U. S. Geological Survey 4,159 square miles. In 1892, the State Engineer, Mr. Martin Schenck, recommended to the Legislature that a small appropriation, \$3,000, be made, for co-operation with the U. S. Geological Survey, in order to induce a more rapid prosecution of the work. This was agreed to, and the interests of the State in the joint work were confided to this officer. The result was that in that year the work was pushed much more rapidly, and aroused so much interest that in the succeeding year the appropriation was increased to \$24,000, with \$6,000 additional for determining county and township boundaries. Under this appropriation a formal agreement was entered into between the State Engineer, on the part of the State, and the Director of the U. S. Geological Survey, for the prosecution of the work, which agreement is here reproduced in full. It is a type of the agreements under which co-operation has been carried on by the U. S. Geological Survey to a successful conclusion with Massachusetts, Rhode Island and Connecticut:

AGREEMENT BETWEEN THE STATE ENGINEER OF NEW YORK AND  
THE DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY  
FOR THE CONSTRUCTION OF A TOPOGRAPHIC MAP OF THE  
STATE OF NEW YORK.

(1) The preparation of this map shall be placed under the supervision of the Director of the United States Geological Survey, who shall determine the methods of survey and map construction.

(2) The order in which, in point of priority, different parts of the State shall be surveyed, shall be agreed upon in detail by the State Engineer and the Director of the United States Geological Survey.

(3) The work shall be based upon the triangulation of the U. S. Coast and Geodetic Survey, the U. S. Lake Survey and the New York State Survey, and wherever the triangulation is deficient it shall be supplemented by the U. S. Geological Survey.

(4) The survey shall be executed in a manner sufficiently elaborate to prepare a map upon a scale of 1:62500, exhibiting the hydrography, hypsography and public culture, and including all town and county boundary lines as established and marked by the State Engineer at the time of its completion, in form similar to the sheets already completed in this State. The preliminary field maps shall be on such a scale as the Director of the U. S. Geological Survey may select to secure accuracy in the construction of the final map.

(5) The hypsography shall be shown by contour lines with vertical intervals of 20 feet.

(6) The heights of important points shall be determined and furnished to the State Engineer.

(7) The outlines of wooded areas shall be represented upon proofs of the engraved map to be furnished the State Engineer.

(8) For convenience the Geological Survey shall, during the progress of the field work, pay the salaries of the persons employed therein, while the travelling, subsistence, and field expenses shall be paid for the same time by the State. For the office work on the map the salaries shall be divided between the two agreeing parties in such a way as to equalize expenses, provided that the total cost to the State of New York of the field and office work for the current year shall not be more than twenty-four thousand (\$24,000) dollars.

(9) During the progress of the work free access to the field sheets and records of the topographers and draughtsmen shall be afforded the State Engineer for examination and criticism; and should the

State Engineer of New York deem that the work is not being executed in a satisfactory manner, then the said State Engineer may, on formal notice, terminate the agreement.

(10) The resulting map shall fully recognize the co-operation of the State of New York.

(11) When the work is completed the State Engineer shall be furnished by the U. S. Geological Survey with photographic copies of manuscript sheets; and when the engraving is completed and at all times thereafter when desired, the said State Engineer shall be furnished by the said Survey with the copper plates of the sheets of the map for use in printing editions of said maps."

Under this agreement, work was prosecuted very actively during 1893, and during 1894 until the State appropriation was exhausted, after which the U. S. Geological Survey continued work at its own expense, but on a more limited scale. In the latter year an attempt was made by the present State Engineer, Mr. C. W. Adams, to obtain an appropriation for continuing the work. This, however, was defeated, and in the place of it, a bill for reviving the old Adirondack Survey was passed, containing a provision for co-operation with the U. S. Geological Survey, but on a limited scale. This was so encumbered by objectionable features that it was vetoed by Governor Flower. The following clause from the Governor's veto message explains the reasons for his veto:

"The so-called Adirondack Survey began practically under Mr. Verplanck Colvin in 1872. It practically ended, though far from complete, in 1883, when Gov. Cleveland condemned it in strong words, and since that year no appropriation for the purpose has been granted, owing to the strenuous opposition to the character of the work and the manner of its carrying on. From 1872 till 1884 the cost of the Adirondack Survey alone amounted to upwards of \$135,000, while only a very small percentage of the total work required to be done has been accomplished. While these surveys are very desirable, they should be placed in the most competent hands under the direction of the State Engineer, and they should be carried on as economically as possible. To revive the work which was quite properly discontinued by law in 1883, and for this purpose to create an independent new bureau outside the State Engineer's office, with a salaried superintendent at \$5,000 a year and assistants, is unwise and extravagant legislation. If the State's experience with such a bureau in the past is any indication of what its experience would be in the future, the people should be spared so great an imposition.

By the passage of this bill the Legislature has also retarded the very excellent work on the State topographical survey which has been going on so successfully under the joint supervision of the State Engineer and the U. S. Geological Survey. Under the arrangement entered into between the United States and New York State authorities, the State was to pay half the expense of this work and the Federal government half, and up to date about a fifth of the area of the State has been sur-

veyed. This bill leaves the question of Federal co-operation substantially to the proposed superintendent of the State land survey, and while making the consent of the State Engineer contingent excludes him practically from participation in the work. A strict construction of the bill would also seem to make it optional with the superintendent whether he should set apart for the general survey \$10,000 of the \$30,000 appropriated, as is authorized in the bill."

The work done in the State up to the present date is represented upon the accompanying map, Plate II, and is summarized in the following statistics:

The total area surveyed is 10,000 square miles, or a trifle more than one-fifth its area. This work will be represented upon 57 atlas sheets, each covering 15' of latitude and longitude, half of which have been already engraved and issued, and the remainder will be published within the next few months. These sheets are upon a scale of 1:62500, with a contour interval of 20 feet. The cost of the work, exclusive of engraving and printing the sheets, has been, on an average, and in round numbers, \$10 per square mile.

The method of surveying employed in this work, although generally similar to that employed by other organizations, differs in certain details. It consists essentially in the location by one or another method of numerous points scattered over the area to be mapped, and then sketching the map with reference to these points. The work of making these locations constitutes the greater part of the operation, but these being mathematical points, do not appear as any part of the map itself, all of which is the result of the operation of sketching. The points selected for location are the summits of hills, the junctions of streams, houses, churches, road corners, etc. They are selected for location in such way as to control to the best possible advantage the contour lines, the streams, roads and other objects which are to be sketched.

Each sheet of the map is surveyed separately. Upon each sheet are located by primary triangulation two or more points as initial points. In some cases these are furnished by pre-existing triangulation; in other cases the U. S. Geological Survey has been obliged to make its own locations, and for doing this primary work, eight-inch theodolites, reading by microscope to 2 seconds, are used. These primary positions furnish a basis for plane-table work, and the work from that point on is relegated to that instrument.

The plane-table is a universal instrument for making maps, applicable to all scales, all methods and all kinds of country. Of all instruments it is the most simple and direct, and, other things equal, produces the most satisfactory results, since with it the map

is made directly upon the ground with the country before the topographer as copy.

It consists essentially of a board of convenient size, mounted on a tripod in such wise that it may be levelled, turned horizontally and clamped in any position. To this board is attached a sheet of paper upon which the map is made. A projection is drawn upon this sheet and the primary points are located thereupon. Another essential feature of the instrument is the alidade, which consists of a metal ruler to which is attached a telescope, or, in the cruder forms, a pair of sights.

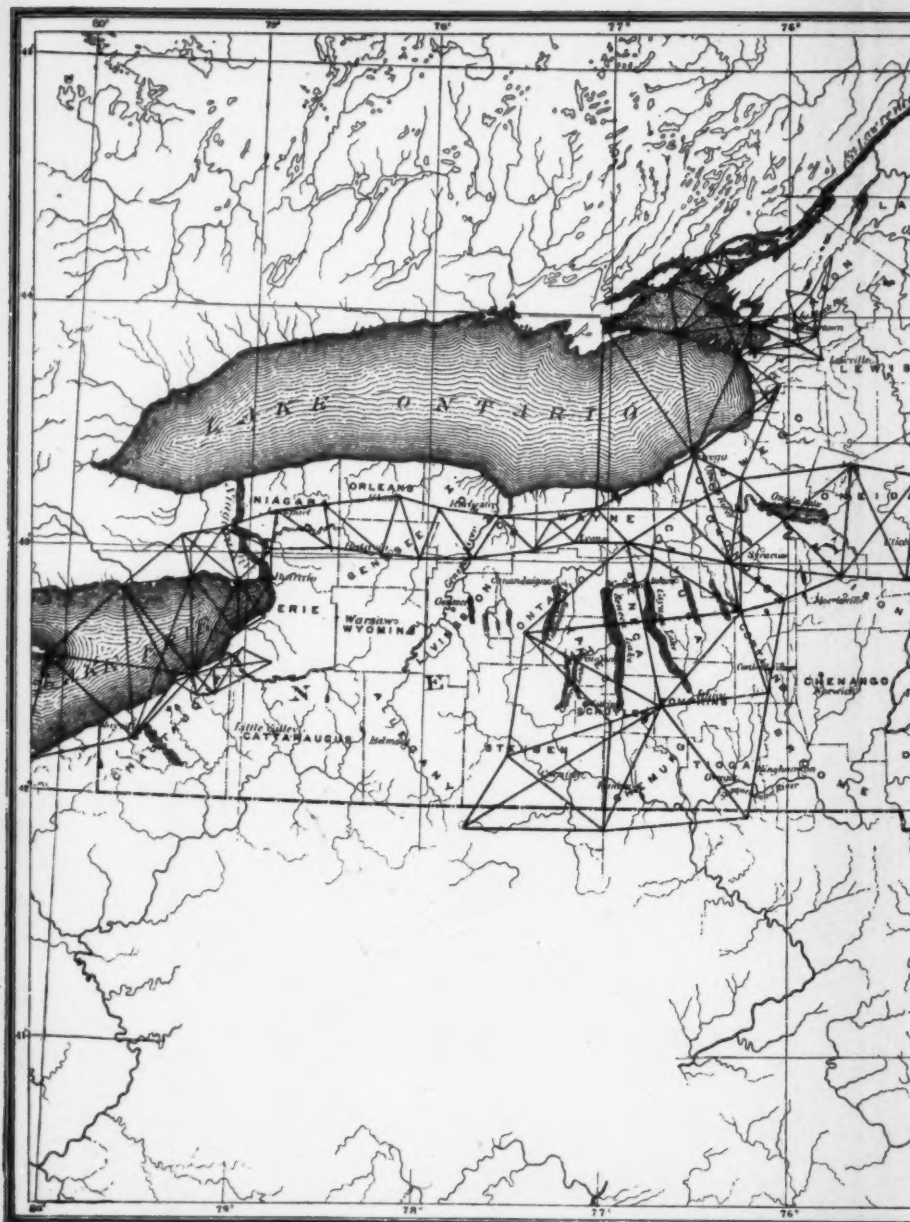
To commence the work with the plane-table, the instrument is set up over one of the primary positions in the area to be mapped and levelled. The ruler of the alidade is laid along the line connecting this station with another primary point. Without moving the alidade, the whole table is then turned horizontally until the telescope points upon the other station. The table is then in its proper position, or, technically speaking, it is "oriented," and is then clamped in this position. Then keeping the ruler upon the point on the paper representing the station occupied, sights are taken and lines drawn to all points in view, which it is desired to locate. The table is then moved to another primary station, is oriented by pointing upon the first station, and lines are drawn to the points sighted from the first. The points of intersection of these lines are the locations of the points sighted. Any of these points may be occupied as stations in a similar manner, and lines drawn to other points, thus locating them. Thus the sheet is covered with locations, and the positions of all points desired are fixed.

There is another method of making locations which is used extensively in mapping roads, streams and other linear features. In this, instead of locating points by the intersection of two lines or triangulation, location is made by measuring the direction and distance. The directions are measured with a plane-table, using commonly a cruder instrument than that employed in triangulation, and the distances are commonly measured by counting the revolutions of a wheel, although sometimes the telemeter is used.

Heights for the location of contour lines are measured by a variety of means dependent upon the accuracy with which they are desired. Primary heights are measured by the use of the Wye level, by which profiles are run across the sheet. From points in these profiles, vertical angles are taken to many points, and their heights determined thereby, while the heights of minor details are



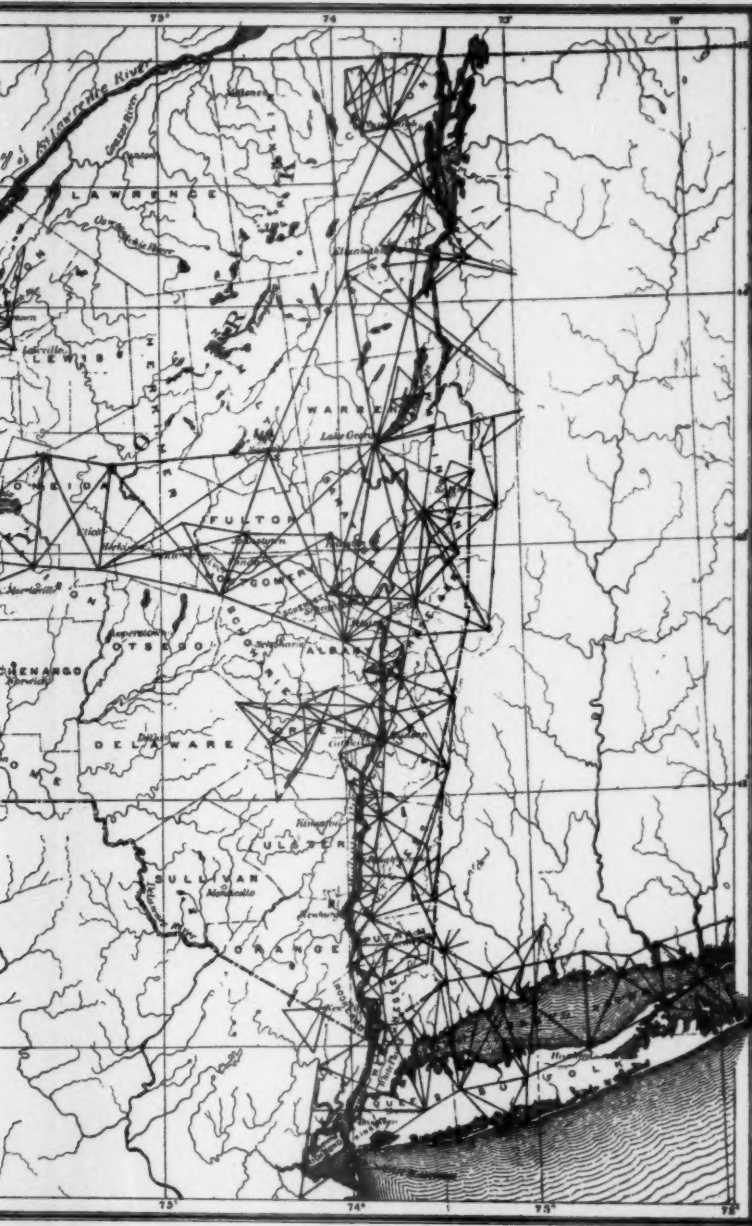




Scale.

20 0 20 40 60 80

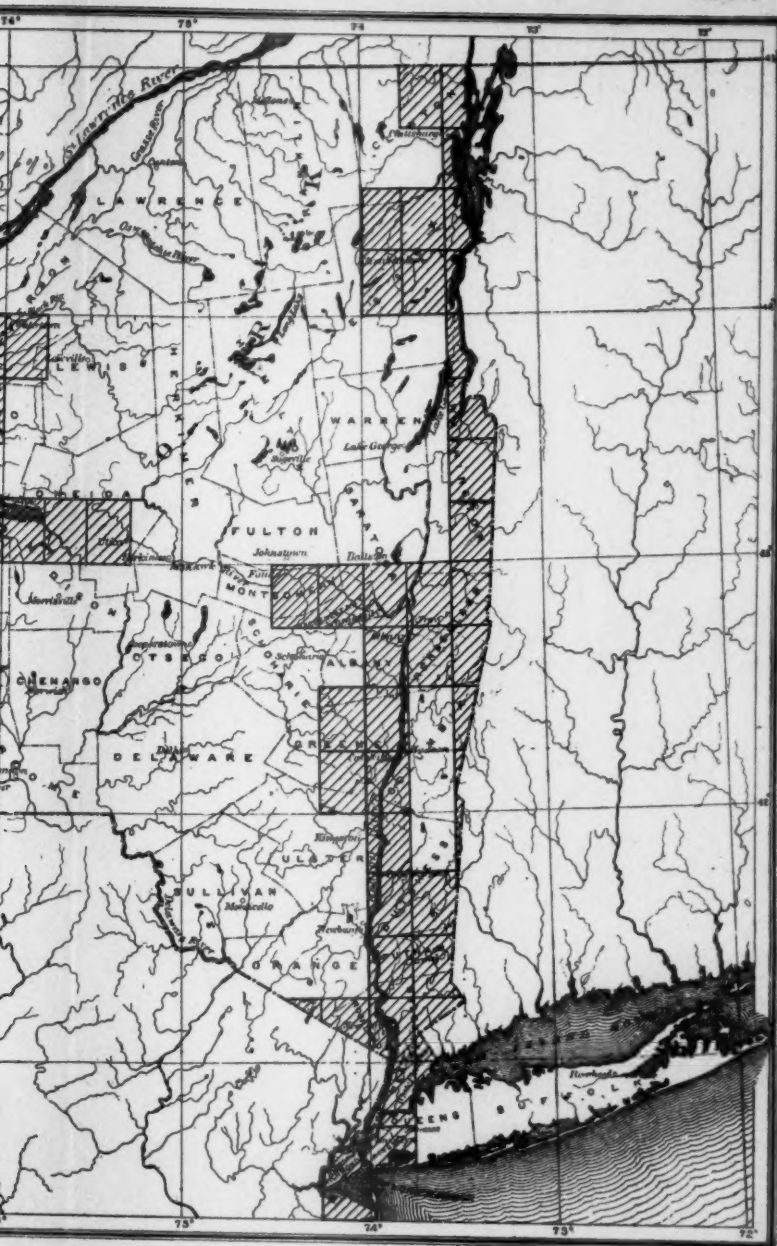
PLATE I.





Scale  
0 20 40 60

PLATE II.







measured by the use of the aneroid, checking it frequently upon known elevations.

When the locations and height measurements upon a sheet have been completed, all these data are assembled upon one sheet, and then taken in hand by the most experienced sketcher in the party, usually its chief, who goes over the sheet, occupying all points which seem desirable, and sketches the natural and artificial features, referring them for position, size and shape to these located points and height measurements. Since the positions are scattered over the sheet, usually with a dozen or more on each square inch, there is little room for error in the sketching.

As is shown by a glance at the map representing the progress of topographic work, the regions already surveyed comprise most of the Hudson valley, and part of that of the Mohawk, portions of the lake region, the surroundings of Niagara Falls, Buffalo and Rochester, the neighborhood of Watertown, the shores of Lake Champlain and part of the high mountain regions of the Adirondacks and the Catskills.

HENRY GANNETT.

## REPORTS OF A CONFERENCE ON GEOGRAPHY.\*

BY

ISRAEL C. RUSSELL.

A "Committee of Ten" was appointed by the National Educational Association in 1892, to consider the general subject of uniformity in school programmes and in requirements for admission to college. This committee, of which President Eliot of Harvard University was chairman, after preliminary discussion, decided to organize nine conferences consisting of ten representatives each, to be selected from instructors in schools and colleges. To each of the conferences a special branch of study, as for example, Latin, mathematics, natural history, geography, etc., was assigned. To each conference a list of eleven questions relating to school studies and to requirements for admittance to college was submitted, on which discussion and recommendation were invited. The report of the Committee of Ten was based on the reports of these several conferences.

The Conference of Geography held sessions in Chicago on December 28, 29 and 30, 1892, the following representatives being present:

T. C. Chamberlin, University of Chicago; George L. Collie, Beloit College; W. M. Davis, Harvard University; Delwyn A. Hamlin, Rice Training School, Boston; Mark B. Harrington, Weather Bureau, Washington; Edwin J. Houston, Philadelphia; Charles F. King, Dearborn School, Boston; Francis W. Parker, Cook County Normal School, Chicago; Israel C. Russell, University of Michigan.

Meetings were held at the Cook County Normal School and at the residence of Colonel Parker, the Principal of that well-known institution. I cannot let this opportunity pass without grateful

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\* Report of the Committee on Secondary School Studies appointed at the meeting of the National Educational Association, July 9, 1892, with the reports of the Conferences arranged by this Committee, and held December 28-30, 1892 (published by the U. S. Bureau of Education, Washington, D. C., 1893), pp. 1-249.

Republished for the National Educational Association with the title "Report of the Committee of Ten on Secondary School Studies; with the reports of the Conferences arranged by the Committee," by the American Book Company, New York 1894, pp. 1-VI, 1-249.

acknowledgment of the generous hospitality extended to the members of the Conference by Colonel and Mrs. Parker.

In the Conference a wide range of topics relating to the subject matter and methods of teaching geography were discussed, and the outline of a report to the Committee of Ten agreed on. A committee of two, of which Professor Chamberlin was chairman, was appointed to write a detailed report. This report, after being revised in accordance with suggestions from other members of the Conference, was duly submitted to the Committee of Ten.

The discussions of the Conference developed the fact that there was such a diversity of opinion among its members in respect to certain of the questions reviewed, that unanimous agreement could not be had. A Minority Report was subsequently sent to the Committee of Ten, by Mr. Houston, which, together with the Majority Report, has been printed in the volume described in an accompanying foot-note.

It is my desire to set forth the facts of greatest general interest embodied in these two reports, as fully as the space at command will permit. Although my name is appended to the Majority Report, my share in its production was trifling. I treat the report here as, what in fact it is, the work of others.

#### RELATIONS OF GEOGRAPHY.

At the very beginning, the Conference was confronted with the question "What is Geography?" It was found to be difficult to strictly define the scope of the science, because of its intimate relation and gradation into related sciences. It did not seem advisable to attempt to greatly modify the range of the subjects usually embraced under the term geography, but the following phases of the subject, in the order in which it was thought they should be studied, are emphasized in the Majority Report:

1. *Elementary Geography*, a broad treatment of the earth and its inhabitants and institutions, to be pursued in the primary, intermediate, and lower grammar grades.
2. *Physical Geography*, a more special but still broad treatment of the physical features of the earth, atmosphere and ocean, and of the forms of life and their physical relations, to be pursued in later grammar grades.
3. *Physiography*, a more advanced treatment of our physical environment in which the agencies and processes involved, the origin, development, and decadence of the forms presented, and the signifi-

cance of the features of the earth's face, are the leading themes, to be pursued in the later high-school or early college years.

4. *Meteorology*, a specialized study of atmospheric phenomena, to be offered by schools that are prepared to do so properly, as an elective in the later high-school years.

5. *Geology*, a study of the earth's structure and its past history, to be offered by schools prepared to do so properly, as an elective in the last year of the high-school course.

Each of these divisions of the subject is considered at length and many facts of general interest brought out. Let us glance at these discussions under their respective headings:

1. *Elementary Geography* should, in the opinion of the Conference, deal not only with the surface features of the earth, but embrace also elementary considerations of related sciences. This is recommended in order that scholars may obtain a wide general knowledge of nature, which will serve a useful purpose in case their studies end before the high school is reached; or serve as a foundation for more specialized study in case opportunities for advanced work can be embraced.

Applied geography, or geography in connection with commerce, history, botany, zoölogy, etc., it is urged, should be studied in connection with the subject to which they are secondary and give aid. It is recommended, for example, that political geography should be studied in connection with history, and that the distribution of plants and animals should form an important feature in the teaching of botany and zoölogy. This recommendation is based on the belief that in general all forms of applied geography are most advantageously studied in connection with their application, providing that a general knowledge of elementary geography has been previously given.

*Physical Geography and Physiography.* — In more advanced geographic studies, in the opinion of the majority of the Conference, the features of the earth's surface should receive special attention in connection with the agencies that produce and destroy them. The fact is emphasized that in this branch of the subject and in methods of treating it, there has been such a marked advance within recent years, largely, I may remark, through the studies of American geologists, that practically a new science has been developed for which a special name is desirable. *Physiography* is recommended for this purpose. To this decision the Minority Report takes decided exception, and gives preference to the reten-

tion of the term physical geography. This adverse opinion is based largely on the indefiniteness of the term suggested as now used by various authors. It may be said in this connection, however, that the objection cited applies equally well to many terms necessarily introduced in a growing science, and does not recognize the fact that the English language is itself developing and being modified in order to keep pace with intellectual progress.

The differences between the Majority and Minority reports are not radical, and are illustrated fairly well, I think, by the example cited. In the former, the recent advances and broader aspects of geographical science are recognized; in the latter, greater deference is paid to tradition.

The ground to be covered by physiography, or physical geography in its enlarged and modernized phase, embraces the study of the wasting of land surfaces, the transportation of the waste to the sea, and its deposition on the marginal sea bottoms; a brief account of the more common minerals and rocks in their relation to the changes of river action during the progress of land denudation; the relations of lakes, waterfalls, divides and their migration, flood-plains, deltas, etc., to the stage of river development in which they are observed; the development of shore lines and the variation of their features under the long-continued action of the shore waves; the interruptions of the normal progress of denudation and shore action by depression, elevation, or deformation; and by volcanic action or by climatic change, including briefly the effects of glacial action.

It is recommended that the various kinds of land forms, as plains, plateaus, mountains and volcanoes, should be considered in accordance with the constructional processes involved in their origin, and that their distribution over the earth should be briefly sketched.

A condensed account is also suggested of the results of recent deep-sea explorations so far as they relate to the forms of oceanic depressions and of the submerged continental borders, the condition of the ocean bottom, character and causes of currents and tides, etc. Should time permit, this phase of the study could be profitably extended so as to include the bearing of these conditions on the distribution of marine life.

The paths marked out for geographical study in the high schools necessitate an acquaintance on the part of the teacher with the latest advance in a rapidly-growing science. Many of the most instructive chapters on topographical development have not as yet

found their way into text-books on geography. Properly speaking, there is no text-book available which adequately reflects the modernized phase of the subject. Hence, the hope that physiography will be widely introduced in high-school courses, cannot be realized until the few colleges adequately equipped for preparing teachers in this department have sent forth their students in considerable numbers.

Admirable courses in meteorology, suggested principally by Professor Davis, are outlined, both for grammar and high schools. These include laboratory work, the use of instruments, observations of the weather, preparation of careful records, the study of weather maps, etc. The plans proposed are so comprehensive that they might be advantageously adopted by many institutions of higher grade than the high schools.

The teaching of geology, although included among the subjects which the Conference was invited to discuss, is but meagrely treated. It is recommended, unless unusual facilities are available, that the study of the geography of the earth in past ages, as well as its life history, etc., be left to normal schools and colleges.

#### ORDER OF TREATMENT BASED ON MENTAL PROCESSES.

This broad subject is treated in the Majority report under four headings, viz.: (1) Observational geography; (2) Representative geography; (3) Descriptive geography; and (4) Rational geography. Of these four discussions the first is probably of greatest importance and contains the most ideas that stimulate thought.

In the judgment of the Conference, observation should go before all other forms of geographical study and prepare the way for them; its object being to develop the power and habit of geographic observation, to give the pupils true and vivid basal ideas, and to arouse a spirit of inquiry and a thirst for geographical knowledge. This work of observation should begin with those features that lie immediately about the pupils and so fall easily within the reach of their direct study and ready comprehension. In rural districts the natural features of the surface will obviously form a large part of the study, while in cities the artificial features must largely take the place of these. In the one instance, natural geography, as seen in the forms of the land, including hills, valleys, plains, meadows, divides, streams and lakes, will predominate; while in the other artificial or humanistic geography will receive leading attention, as streets, railways, wharves, harbors, parks, plots, wards, etc. But something of both these groups of subjects may be found and utilized in both



localities. Neither should be neglected, for the pupils need not only to acquire clear ideas of the things by which they are chiefly surrounded, but type ideas of the things which characterize other localities, and of which they need to form correct ideas without being able to see them. Observation, however, should not be confined simply to the passive fixed features by which pupils are surrounded. They should observe the agencies that produce surface changes, such as winds, rains, floods, thawing, freezing, cultivation, etc. The temporary streams that follow heavy rains represent on a small scale many of the natural processes by which surface features are produced. From these immediate agencies the observations should extend to the phenomena of the weather and the climate, such as temperature, winds, clouds, seasons, etc.

An important supplement to one's ability to see the features that give expression to the face of nature, is facility in representing them in sketches, maps, models, etc. The study and practice of descriptive geography is thus only secondary in importance to the training of observation, and carries with it the ability to read maps, and obtain from them a realistic mental picture of the objects they portray.

In discussing rational geography, the fact that all the surface features of the earth are changing, that they have a past history and are on the road to future developments, is made prominent. It is by this branch of geographical study that the reasoning powers are most fully exercised. Each element in a landscape is due to antecedent causes, and preserves in its own form much of the history of its development. It is urged that the study of the reason of things should be assiduously cultivated, for it is the soul of the science.

#### GEOGRAPHY IN RELATION TO MENTAL DISCIPLINE.

The Majority report emphasizes the fact that clear and definite views of the culture purposes of geographical study cannot be too strongly urged upon the teacher. It is recommended that special attention be paid to the development of three separate classes of mental activities, viz., the power to observe, the power of scientific imagination, and the power of reasoning.

As resources for the training of the observational powers, attention is directed (1) to the study of surface forms, such as hills, valleys, plains, plateaus, streams, lakes, shores, and all similar phenomena within the pupils' horizon; (2) observations on the temperature and its relations to the direction of the sun's rays, the

apparent motion of the heavenly bodies, as their circling round the poles, the rising and setting of some stars and not of others, the shifting north and south of the sun, moon, etc.; (3) movements of the atmosphere and their effects, rain and its effects, snow and its effects, fogs, clouds, etc.; (4) plant life and its dependence on heat, moisture, sunlight, etc.; the influence of soil, slope, etc.; (5) observations on animal life, of similar nature; (6) observations on man in the family, in educational, church, social, and business organizations, in city and town organizations, and so on up towards the larger human organizations and the forms of government.

Under work involving the culture of the imagination will fall the formation of concepts of all the larger features of geography and of all features beyond the range of observation, as (1) the river basins, the great relief systems, the continental divisions and subdivisions, the ocean bottoms, the distribution of land and water, and, in a less pronounced way, the picturing of all geographical features not actually observed; (2) modifications of apparent motions due to imagined changes of position of the observer on the earth's surface, such as the position at the pole, on the equator, on the different parallels, etc.; (3) distribution of the meteorological agencies over the globe, as moisture, winds, climate; the mental picturing of the great wind movements, the cyclonic circulation, the zones, etc.; (4) distribution of plant life developed in the form of a mental picture in its relations to the earth's surface, to land and water, to altitude and climatic conditions, as distinguished from a mere memorizing of the facts of distribution without any such pictorial conception; (5) distribution of animal life in like manner; (6) distribution of races of men, forms of government, national territory, etc.

The foregoing lists of topics furnish the ground-work for the culture of the reasoning powers if the question of causes and agencies is raised in connection with them. Why do the several features take the forms they do? By what agencies were they caused, and why did these agencies work in such ways? How did these forms originate? What are the causes of the winds, the clouds, the changes of temperature? Why are the animals and plants distributed as they are? Why were these cities located as they are? Why are these large and those small? Why do these railways take this course rather than another? And so on.

In discussing methods of presenting geographical information, stress is given to the equipment of geographical laboratories. In reading these recommendations, one is saddened by the thought

that with few exceptions, and at present I have but two in mind, the colleges and universities of America lack the equipment that is thought requisite for public schools. It may be said, perhaps, that the requirements of schools and colleges differ, but all, I think, will admit that geography in some of its phases is as well suited to be taught in the colleges as in the schools.

It is recommended that schools be supplied (1) with large-scale maps of their own district and their own State; (2) with the best obtainable series of general maps, prepared as far as possible on uniform scales; the style of projection and the scale being indicated on each map; (3) with a sufficient number of small globes to enable every scholar sufficiently advanced to study the globe individually; (4) with illustrations of various kinds as liberally as possible, including photographs, lantern slides and means of projection; (5) if possible, with a few models (whose scale should not be unreasonably exaggerated) representing the home district, if these can be obtained, or, if not, at least with typical models of some interesting regions of our own country; (6) with books of reference on history, travels, natural history, etc.; involving geographical elements and suitable for the use of both scholars and teachers, and in increasing numbers year by year; and (7) with a selected series of topographical maps.\*

One of the questions submitted to the Conference for discussion and recommendation relates to the time at which the study of geography should be begun. In reply, it is stated that while the simple facts of a geographical nature cannot be introduced too early in a child's education, it is not recommended that the formal study of geography as a separate subject, however elementary, be undertaken in the lowest grades. But the habit of observation should be stimulated as soon as the child enters the school and its development constantly encouraged.

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\* The importance of placing good topographical maps in the hands of students, led to the appointing by the Conference of a committee consisting of Messrs. Davis, King and Collie, to consider in what way the maps issued by various Government and State surveys might be made available for school use. A valuable report by this committee entitled, "The Use of Government Maps in Schools," has been published by Henry Holt & Co., New York. Price 34 cents. In it are instructive descriptions of over fifty phases of relief that are well illustrated by maps which can be had by teachers either free of charge or for a nominal sum to cover press-work and paper. This report of 65 pages contains a brief account of the maps issued by the U. S. Geological Survey; U. S. Coast and Geodetic Survey; Mississippi River Commission; Missouri River Commission; U. S. Lake Survey; State topographic surveys, including those of Massachusetts, Rhode Island, Connecticut and New Jersey; U. S. Weather Bureau, and U. S. Hydrographic Office.

Outlines of methods of instruction in various grades are suggested, but it is in connection with high-school work that the broadest treatment of the subject is presented. These recommendations are filled with the spirit of modern science and pregnant with ideas that are of interest not only to teachers, but to all who are inclined to either fireside-travel or active exploration.

In illustration of the scope of physiography, the development of land forms is presented as an indication of the nature of the paths to be followed. It is stated that the general conception of the wasting of a land area and the ultimate production of a lowland of denudation from whatever form the area had in its earlier stages, deserves early and deliberate illustration. Around this fundamental conception, the teacher may group a variety of facts, both local and general, concerning the rocks and their structural relations in the earth's crust, on the one hand, and the weather and its expression in climate on the other hand. However hard its rocks, however dry the climate, a lowland of faint relief is the ultimate form of every land area under the slow wasting of its surface; and during all the progress of this wasting, a systematic sequence of forms is exhibited. The essential elements in the study are thus introduced early and in their simplest form; the slow but continuous variation of land forms under these processes; the long duration of time that must be considered, even if not conceived. Every part of the land surface represents some stage in the course of its progress from its beginning in constructional uplifting or accumulation, towards its end as a completed lowland of denudation.

The particular consideration of rivers, under whose guidance the waste of the land is carried to the sea, may be advisably introduced as the next general heading; because, from whatever constructional processes of accumulation or uplift a region has its beginning, there are certain general features of river-life common to all regions, and these may be conveniently presented before the different structural kinds of land forms are taken up. This serves not only to impress upon the scholars the systematic sequence of form-changes during the progress of general denudation, but also to emphasize the many features of the land that are associated with the development of its drainage. Throughout this division of the subject, particular care should be taken to bring the class into sympathy with the subject, by forgetting for the moment human measures of time and looking at rivers in the way rivers would look at themselves. Thus are examined the conditions that determine the original drainage area of a river, the location of its enclosing

divides, and the arrangement of tributary branches; then the quick deepening of its valleys and the drainage of any lakes in which its waters may be at first detained, and, at the same time, the development of additional young side-streams, the accompanying subdivision of the drainage area, and, occasionally, the rearrangement of discharge by the shifting of divides under the action of active competing streams; with the rapid deepening of the valleys comes at first the development and later the extinction of the water falls; with the widening of the valleys comes the slow spreading out of land-waste in flood plains where the mature streams meander and in deltas, where the streams branch out in "distributaries." Late in river-life, when the inter-stream hills are wasted away, the old streams wander sluggishly almost at will along ill-defined courses, slowly doing the little that remains for the completion of their life-work. During the advance of this consideration, specific examples may be given of rivers in one or another stage of development from various parts of the world.

After gaining an understanding of changes in the life of an undisturbed river, the effects of elevation, depression, or deformation of the land, or of climatic changes may be introduced. With their introduction, an important step is taken toward the more complicated conditions of nature; at the same time, the subject becomes somewhat more difficult from the necessity of maintaining a greater number of factors in mind while interpreting the relations of rivers having more or less disturbed development.

The consideration of regions of different structure, and hence of different surface expression, advisably follows the preceding account of river development.

In illustration of what is here intended, reference is made to the group of plains and plateaus, characterized by possessing a horizontally stratified structure. These may be first considered according to the condition of their accumulation; as marine plains, lacustrine plains, fluvial plains, lava plains, snow plains and dust plains. Second, according to the manner in which those formed under water have become exposed as dry land; as by upheaval from beneath the sea, by down-cutting of lake outlets, by evaporation of lake waters in arid climates, by melting away of the ice barriers of glacial lakes. Third, according to the expression of surface form as dependent on complication of structure, altitude above sea-level, stage of development, condition of climate. Fourth, according to the distribution of plains and plateaus of different kinds; thus we find a young marine plain in Florida, an old marine

plain, much dissected, in West Virginia; a young lacustrine plain in Minnesota and Dakota, an older lacustrine plain in the Green River Basin of Wyoming; a young lava plain in the Snake River Basin of Idaho, an older lava plain in West Scotland, and so on. Mountains should receive similar treatment. Features of glacial origin deserve especial attention in the Northern States.

Experience shows that when the subdivisions of the land are thus rationally explained, their peculiarities are much more easily remembered, and their relations to habitation and productions are much more fully appreciated. By comparing this outline with the table of contents in the classic works on Geography by Ritter, Humboldt and Guyot, it will be seen that a new element has been introduced into the science by the modern school. Rational geography has supplanted mere description. The fact that rivers and lakes, mountains and plains, have life histories, and have resulted from far-reaching causes, and are still undergoing change, places geography on a higher plane as a disciplinary study than has generally been recognized.

#### GEOGRAPHY IN EXAMINATION FOR ADMISSION TO COLLEGE.

One of the most important questions referred to the Conference, relates to the weight to be given to geography in examination for admission to college. In this connection the Conference recommended that colleges should accept as preparatory work in such due measure as a fair estimate of their value shall admit, all studies which the high schools are compelled by their conditions to teach, and that physiography; geology and meteorology should be given values equal to the full extent of the work expended in their pursuit.

To the last recommendation the Minority report takes exception on the ground that the subjects mentioned are too nearly allied.

At a joint session of the Conference on Geography and the Conference on Natural History, held at the University of Chicago, the terms for admission to college were discussed at length, and the following resolution unanimously adopted:

"Resolved, that it is the sense of the Joint Conference that at least one-fourth of the time of the High School course be devoted to nature studies, and that this amount of preparation be required for entrance to college."

This recommendation does not appear in connection with the published report of the Committee of Ten.

The conclusion in reference to requirements for admission to college, embodied in the above, has important bearings on ques-



tions now being discussed in educational societies and college faculties. The conflict between classical and modernized scientific courses is still being carried on, although the end seems near. On one side are arranged those who believe that a liberal education, culture and refinement can only be had by pursuing the traditional routine in which the study of ancient languages occupies a major part; in opposition, are teachers who see in the modern science many branches of study fitted to develop individuality and intellectual independence, as well as to promote culture and refinement.

Those who have taken an active part in modernizing and vivifying geographical science, are of the opinion that in the educational revolution now in progress, it should be placed in the first rank in all grades of study from the primary to the post-graduate. Its claim for such a conspicuous place is, as expressed in the report before us, because it *develops the powers of observation, the powers of scientific imagination and the powers of reasoning.*

## THE UNITED STATES GEOLOGICAL SURVEY IN 1894.

BY

MARCUS BAKER.

The year 1894 was a noteworthy one for the U. S. Geological Survey. One important event distinguishes it from all previous years. In May, 1894, Major J. W. Powell, who had directed its affairs almost from the beginning, in 1879, resigned, and was succeeded by Mr. Charles Doolittle Walcott. A change of bureau chiefs in Washington is too common an event to be ranked as noteworthy, but with the scientific work of the government the case is different. The retirement in the past, of such men as Henry and Baird from the Smithsonian, Hassler and Bache from the Coast Survey, and quite recently of Mendenhall from the Coast Survey, and Powell from the Geological Survey, profoundly affect the bureaus and work directed by them. The work of scientific research, of enlarging the bounds of human knowledge, is not one that goes by routine. To so direct such work that useful results may be acquired for the people and for science requires peculiar qualities. For the geologic branch of this task the successful director must not only be versed in the knowledge already gained respecting the surface and structure of our earth, must not only know the directions in which new and valuable results are to be sought, but must have wide acquaintance with men and affairs, and be an efficient executive. Looking outward, he must be able to clearly present to Congress and the country results already obtained with clear plans and projects for yet other results to be sought for, and looking inward to the administration of his office he must be able to co-ordinate and harmonize the labors of the various scientific co-laborers who constitute his somewhat "cranky" household.

To clearly place the work of 1894 in its proper setting, it will be found useful to summarize the work from the beginning in 1879, down to July 1, 1894, when the present director, Mr. Walcott, formally began the conduct of its affairs.

The U. S. Geological Survey created by act of March 3, 1879, arose from the consolidation and reorganization of three pre-existing surveys, all of which had for a number of years been conducting surveys in the Far West. The first director, Mr. Clarence King, directed its affairs for two years, March, 1879, to March, 1881, when its administrative burden led him to resign, and he was suc-

ceeded by Major J. W. Powell, who directed its affairs for 13 years, March, 1881, to June, 1894. Under him the Survey began to grow rapidly, too rapidly, his critics said, when the appropriation began to grow. At first its operations were confined to the Far West, to the Rocky Mountains and beyond. But a debate arose in Congress very early as to why surveys and geologic researches made for all the people and paid for by all the people should be restricted to only one part of the country. The survey had been created to investigate "the geological structure, mineral resources and products of the national domain," and the representatives from the Central and Eastern States pertinently inquired whether their part of the United States was not a part of the *national domain*. The outcome of the debate was a decision by vote of Congress that the field to be investigated was not merely the little known West, but the whole extent of the United States. Thus, in 1883, work began in the Appalachian Mountains, a region which, despite its long settlement, was hardly so well known geographically and geologically as many of our western mountains.

One of the first and most urgent needs for the profitable and economic prosecution of geologic work is maps, topographic maps, maps showing the configuration of the land surface as well as the towns, roads, water-courses, etc. But to make such a map of the United States on a scale large enough for practical needs is a vast undertaking. The area of the United States, including Alaska, is 3,600,000 square miles, an area exceeding that of all Europe. Geographers had dreamed of a map of this vast territory. Nay, estimates of its cost had been made and submitted to Congress, but the estimated cost was so great as to be prohibitive. One class of people insisted that only a large scale, detailed, accurate and therefore expensive map was worth making. This or nothing they argued. Confronted with this theory the Geological Survey found a condition. Maps it must have for its work, and accordingly under legislative authority it set about making them. The costly methods of the European surveys were inapplicable and were rejected. The elaborate large scale maps of the Coast Survey were not needed for the geological work, and hence the methods used in their production were not adapted to this new need. The old Western surveys of Hayden, Powell and Wheeler had done map work extensively in the West, and from these surveys there came into the Geological Survey a small band of trained surveyors accustomed to rapid, sketchy, mountain work over large areas. This body of men formed the nucleus of a surveying corps, which under the sym-

pathetic and stimulating guidance and skilful leadership of Major Powell set about the task of adapting and improving old and inventing new methods to hasten and cheapen the mapping of the United States. Various experiments were tried, resulting in rapid and continuous improvements in methods. At the same time map-making went swiftly and merrily on. Many thousands of square miles were mapped each year in the Far West and in the imperfectly known Appalachians, of which there existed only either very general small scale maps or none at all. These Appalachian surveys, undertaken by the U. S. Geological Survey, were on a scale of 1:125,000, or about two miles to one inch, and while the main peaks, ridges, etc., were located by triangulation, the details were shown much generalized, all minute detail being ignored. These maps were hailed with delight by geologists and engineers engaged in studying and developing the region. For projecting railroads, opening new coal fields and iron mines they were repeatedly declared to be of great value. But the education of the map users was rapid, and soon the demand came for more detail and larger scales. The old "battle of the scales," which raged so violently in the Ordnance Survey of Great Britain in the "fifties," raged in a small way in the Geological Survey. In certain areas the scale was enlarged to 1:62,500, or about one mile to one inch, and in the Appalachians an increasing amount of detail was shown on the "two-mile" maps. Thus the later work was more detailed and more precise than the earlier, as has been the history of all national surveys. Then came revision of the earlier work, and in some cases the whole area was gone over again. But the importance of keeping the scale down to the smallest practicable limit has never been lost sight of. And in deciding upon the scales to be adopted much weight has been given to the practical requirements of the Survey itself, and small weight to European or other precedents, because of the very unlike conditions. With enlarged scales comes enlarged cost. The Survey has therefore resisted the pressure for enlarged scales, a pressure which has come both from within and without, and with a few trifling exceptions has published no maps on a larger scale than 1:62,500, or about one inch to one mile.

The total area mapped during the 12 years, 1883-1894, is in round numbers 609,000 square miles, an area equalling about one-fifth of the United States (Alaska excluded), and is comprised in 906 atlas sheets, of which 121 were produced during the fiscal year 1893-'94. The area mapped, depending on various causes, such as the scales used, the amount of money appropriated, etc., has ranged from 15,000 to 82,000 square miles per year.

Progress in topographic mapping during 12 years, 1883 to 1894, is shown in the following table in which the relative amounts on the three scales used are shown by percentages:

YEAR.	SQ. MILES.	PERCENTAGE ON SCALE OF		
		1:250,000	1:125,000	1:62,500
1883.....	15,000	73	27	0
1884.....	45,000	53	46	1
1885.....	57,000	33	63	4
1886.....	82,000	23	72	5
1887.....	56,000	25	66	9
1888.....	52,000	26	67	7
1889.....	64,000	20	70	10
1890.....	68,000	0	83	17
1891.....	65,000	0	74	26
1892.....	53,000	0	85	15
1893.....	26,000	0	27	73
1894.....	36,000	3	31	66

Surveys more or less extensive have been made in nearly every State and Territory. Massachusetts, Rhode Island, Connecticut, New Jersey and Columbia (if the District of Columbia may be so called) are completely mapped. Large tracts have been surveyed in California, Nevada, Utah, Arizona, New Mexico, Montana, Texas, Colorado, Kansas, Missouri and Arkansas. The Appalachian Mountains are nearly all mapped, and considerable tracts are also mapped in Louisiana, Oklahoma, North and South Dakota, Iowa, Illinois, Wisconsin, New York, Maine and Pennsylvania.

The atlas sheets of this great mother map of the country are now to be seen in various public libraries, so that it is perhaps needless to describe them other than to say that they are of uniform size, about 16 by 20 inches, that they are projected without reference to political divisions, that they are printed in three colors, and are designed with a view to make them as legible and as useful as possible, not merely to the geologist and engineer, but to every map user; and this means everybody, for who is not a user of maps?

Thus far we have spoken only of topography and topographic maps, the occasion for this being the large proportion of time, money and energy given by the Geological Survey to this class of work. Why so much energy should be devoted by a geological survey to the production of topographic maps may not be self-evident, and hence a word or two of explanation.

Geology is concerned with the rind or skin or crust of this ball on which we live. Out of this rind come many useful things. The iron, coal and other minerals dug out of it last year were worth 609 million dollars. It is the business of the geologist to study this crust, to map out, *i. e.*, picture out, for *mappa* means a picture, the beds or layers of material composing it, to find out the position and thickness of the beds of limestone and sandstone, of the clays, gravels, coals and ores, of the lavas and granites and the distribution of underground gas, oil, brine and water. For this work maps are of the utmost importance, both for the study and for exhibiting the results of the study. The State geologists who, in various States during the past, and present as well, have prosecuted geologic work, have unanimously regretted the lack of this powerful aid to their work. In European countries this need was never keenly felt since military needs had produced topographic maps before the geologic want was felt. Thus the European geologist found maps ready to hand. In the United States, however, the need of topographic maps has been and is for peaceful rather than for warlike pursuits. It is the geologist and engineer rather than the soldier whose demands have produced such maps as we now have. The Geological Survey, confronted with this need, has proceeded to meet it and to make, under authority of law, a topographic as well as a geologic map, and it is thus in fact though not in name the U. S. Topographic and Geologic Survey.

This need of topographic maps has delayed the production of geologic maps, and it is only in the past year or two that the Survey has been able to conclude upon the multifarious and complex questions which required decision before the publication of the first sheet of the great geological atlas of the United States was possible. Questions of classification could only be adjusted after the collection and comparison of a considerable body of facts, gathered from a wide area. But after much study, after many and lengthened conferences by men of diverse views and experience, after various comparisons and compromises, a system of classification intended for the whole country has been agreed upon, a color and pattern scheme adopted and a beginning made in publication. On the first of July, 1894, five folios had been printed and 39 more were in various stages on their way to final publication, some of them being nearly finished, others barely begun, and still others in various intermediate stages.

The final outcome of the geological surveys and studies of any district are to be shown in what are technically known as *folios*.



To clearly understand what a folio is one should be seen. But as it is impracticable to place a copy in the hands of every reader of this article, the following condensed and imperfect description must be substituted:

A geological *folio* of the U. S. Geological Survey is a large thin atlas in a cover of heavy manilla paper. On this cover is the imprint *Department of the Interior, U. S. Geological Survey*, followed by the name of the Director, and then the words *Geological Atlas of the United States*. This is followed by the name of the sheet, such as *Sacramento Sheet, California*, or *Kingston Sheet, Tennessee*, etc. A skeleton map on small scale shows the general region of country surrounding the sheet, while a shaded area on the skeleton shows the particular spot or area whose topography and geology is exhibited within the folio. A table of contents follows, called *List of Sheets*, usually 7 or 8 in number. Printed on the inside of the cover of each folio is a very simple and elementary description of the geologic map of the United States. It aims to tell in the simplest manner the leading facts about this map. *Explanatory Text* it is called in print, but Kindergarten text is its nickname. It begins "A map showing the watercourses and the unevenness of the surface is a topographic map," and farther on is added "A map showing the distribution of rock masses is a geologic map." This "kindergarten" text is sometimes, though not always, followed by a general account of the geology of the region or district within which the specific sheet lies, a description of its structure and an explanation of its supposed origin and history. This description is aimed at neither the infant nor the philosopher, but is designed for the general reader, and accordingly is as free from technical words as the subject will permit. In the case of the *Sacramento Sheet, California*, this descriptive text is entitled *Outlines of the geology of the gold belt*; in the *Kingston Sheet, Tennessee*, it is entitled *Outlines of Appalachian history*.

Of the three groups of text the last is called *Descriptive Text*, and it deals specifically with the atlas sheet which it accompanies. This text is, from the needs of the case, the most technical of all, and yet it is not needlessly technical.

These three groups of text are followed by three, usually or sometimes, four maps, each covering the same area. So many facts are to be shown that if all were printed on one sheet, there would be crowding and obscurity. The first is the topographic map which has already been briefly described. The second is devoted to *Areal Geology*, and by colors and patterns shows the distribution

of the various rock masses which form the surface of the country, or rather, perhaps, it should be said of the rocks just beneath the layer of soil made by their disintegration. The third map, entitled *Economic Geology*, is similarly covered over with patterns and bands or patches of color, showing the distribution of rock masses, but differs from the preceding in showing certain ones more conspicuously. The masses selected for emphasis are those with which deposits of known economic importance are associated. Those masses with which worked or workable iron ores are associated are shown in a strong red color; those containing coal, in blue; those containing gold, in yellow, etc. The fourth map is entitled *Structure Sections*. If the reader will imagine a trench half a mile or more deep, with vertical walls, to be dug across the country shown on the map, and then take an imaginary walk through this imaginary trench, looking at its walls, he will see, in imagination, what the geologist is trying to show in this structure section map. He will get a side view, as it were, of the crust, or of the skin on the crust. He will see whether the rock masses are beds of coal or limestone or sandstone, and whether they are lying level or sloping or are bent, folded or irregularly twisted or crushed. The last leaf of this folio is a diagram entitled *Columnar Sections*, whereon is shown the geologic age and the thickness of the different rock masses to be found as we go downward into the crust.

This short description must suffice, all imperfect as it is, and as, indeed, it would still be, though it were longer and better. It will have served an useful purpose if it quicken some reader's curiosity to call at his nearest public library and see for himself.

The long and laborious work preliminary to beginning the publication of these folios is now accomplished. Publication has actually begun and is going forward with increasing speed. More than 100 manuscript sheets are in hand and the work of publication is in progress on nearly two score of them.

This article has already grown to its full limit, and I therefore hasten to conclude.

During the year 1893-'94 the Geological Survey published its usual annual report and its usual volume on what is colloquially known as *mineral statistics*, but officially as *Mineral Resources of the United States*. The total value of the mineral products for the year was \$610,000,000. It published 3 monographs and 17 bulletins, ranging from a thin paper-bound pamphlet to a stout quarto volume. It engraved and printed 69 topographic maps and 5 geologic folios. It made 192 chemical analyses. It increased its library,

almost exclusively by exchanges, from 104,000 to 110,000 pieces (books, pamphlets and maps), and now has a collection of works on geology in general and of the United States in particular that is without an equal.

And lastly, it has a new director selected from its own corps for merit alone, and who succeeds an older, a skilful and a successful leader. Thus he is exposed to criticism by contrast. That such criticism has not come is one of the strongest evidences of the wisdom of the choice and one of the best auguries for the future.

MARCUS BAKER.

## GEOGRAPHICAL WORK IN CANADA, 1894.

BY

DR. GEORGE M. DAWSON.

The government organization in Canada most immediately connected with the mapping of the country as a whole is the Dominion Lands Survey, its field of operations being the Northwest Territory with Manitoba, the "railway belt" in British Columbia, and generally all parts of the Dominion not included in the several older provinces.

The main object of this survey, as its title implies, has been the blocking out and subdivision of the public lands of the Dominion, but extended exploratory surveys have also been carried out, as well as, in late years, topographical surveys in the Rocky Mountain region. In 1894 a new departure has been made in the direction of irrigation surveys, including accurate lines of levelling and the gauging of rivers and streams. These surveys are intended eventually to include a large tract of south-western Alberta, embracing the foot-hills of the Rocky Mountains, and a considerable width of the adjacent plains, where the rainfall is in many years insufficient for the proper growth of crops, although the soil and other conditions are of the most favourable. This work is being carried out under Mr. J. S. Dennis. The general plan pursued is, to cover the country by a primary net-work of levelled lines following the main lines of the land surveys, and establishing permanent points of reference at township corners, river crossings and other convenient places. In this way a satisfactory basis, and one referred to a common datum, will be laid down, to which all local irrigation surveys may be attached.

In 1894 the Hydrographic Survey of the Canadian portion of the Great Lakes was continued by Mr. W. J. Stewart, under the Department of Marine, and the work in Georgian Bay and the "North Channel" of Lake Huron was completed. One additional chart, based on this work and published by the British Admiralty, has been issued, and it is hoped soon to issue a complete chart of the "North Channel." Also under the Department of Marine is the Tidal and Current Survey which is now being actively prosecuted on the Atlantic Coast by Mr. W. B. Dawson.

Surveys of the region traversed by the Canada-Alaska boundary were continued during the summer of 1894 under Mr. W. F. King and Professor T. C. Mendenhall, Commissioners appointed for that purpose by the Governments of Great Britain and the United States respectively. The delineation of the country through which this line is to be defined, may now be considered as almost completed, from the southern extremity of the line to the point at which it reaches the 141st Meridian. Seven Canadian parties were in the field, under the general superintendence of Messrs. Wm. Ogilvie and O. Klotz. The photo-topographical method has been throughout employed successfully in these surveys, and by its means nearly 10,000 square miles of rough and inaccessible mountain country have been laid down during the past season by the Canadian contingent.

Although secondary to its main objects, a more or less considerable amount of geographical work is necessarily undertaken each year by the Geological Survey of Canada. The field of operations of this survey extends to all parts of the Dominion, including the various provinces as well as the unorganized territories. Even in the older provinces it is usually found requisite to add much to the existing maps in order to render them suitable as a basis for the representation of the geological features; while in the more remote districts through which lines of exploration are carried, it is often necessary to devote as much time to geographical as to geological work, the rivers, lakes and astronomical positions being laid down and determined for the first time. In either case, both classes of work have as a rule been undertaken and carried out concurrently, either by the geologist himself or under his immediate supervision.

In 1894 the more important exploratory surveys in Canada, from a geographical point of view, have been two conducted by the Geological Survey, and of these it is proposed to give a few more detailed notes.

In 1893, Mr. J. B. Tyrrell, of the Geological Survey, carried a reconnaissance survey from the east end of Athabasca Lake across the "Barren Lands" to the head of Chesterfield Inlet, returning along the west coast of Hudson Bay. The most detailed account of this interesting journey which has yet been published appears in the November (1894) number of the *Geographical Journal* (London). In 1894 the same gentleman was commissioned to examine and survey a second line through the great region to the west of Hudson Bay. In this expedition he was accompanied by Mr. R. Munroe Ferguson, the party consisting besides of four men, with

two canoes. The unexplored country was this time entered from the north end of Reindeer Lake, of which the waters are tributary to the Churchill River. Under the guidance of two local Indians, Ice River was followed up for seven days, to a portage route which led through Thanout and Theitaga Lakes, to a lake at the head of Kazan or White Partridge River, in north latitude  $60^{\circ} 10'$ . From the head of Reindeer Lake to this point, no less than fifty-three portages had to be made, with an aggregate length of more than fifteen miles.

The Kazan River was then descended for a short distance, to Ennaida Lake, on the edge of the "Barren Lands," where the Indian guides turned back, having no knowledge of the country beyond. The river still maintained its northward course, however, and after some time a camp of Eskimos was fallen in with, and two men were again procured as guides, thus relieving the party of any uncertainty as to the route. For two weeks the river was followed down and surveyed, and the western shore of the large Yath-kyed Lake, through which it flows, was also examined.

Although far inland, numerous camps of Eskimos were passed during this part of the journey, these people here living entirely upon the cariboo and seldom visiting the coast.

When in latitude  $63^{\circ} 7'$  it was definitely ascertained that the Kazan River flows into the head of Chesterfield Inlet, but that by means of a series of long portages another river might be reached which enters Hudson Bay much further south. Various considerations, including the lateness of the season, appeared to Mr. Tyrrell to render the last-named route preferable, and with the help of seven Eskimos the canoes and outfit were conveyed across these portages, and the shore of the bay was reached on September 18th, in about latitude  $62^{\circ}$ . Favoured by good weather, the party then proceeded southward along the west shore of the bay, and attained Fort Churchill on October 1st. From this place, after waiting for the full onset of winter, the return was made overland and along the ice of Lake Winnipeg to Winnipeg City. As a result of Mr. Tyrrell's work in this region in 1893 and 1894, it will now be possible to revise the geographical outlines of the great system of lakes and rivers of the "Barren Lands," which on all previous maps has appeared in the vaguest possible manner, after Hearne, who wandered through this country in search of the Coppermine River more than a hundred years ago. We are also now furnished with the main geological features of this tract of country, which is found to include, besides the Archæan rocks, a large area of Lower Cambrian.



A second important exploration, also carried out under the auspices of the Geological Survey, is that of the interior of the Labrador Peninsula by Mr. A. P. Low, assisted by Mr. D. I. V. Eaton. In 1893, Mr. Low had crossed from Mistassini Lake to the upper part of the Koksoak or Ungava River, which was followed down and surveyed to its mouth in Ungava Bay. It had been intended to spend the winter here, but the scarcity of provisions led Mr. Low to embrace the opportunity of a passage by the Hudson Bay Company's steamer to Hamilton Inlet, on the east coast of Labrador, and the company's post at the head of this long inlet was adopted as a base for further work. In order that surveying operations in the interior might be carried on successfully during the ensuing summer, it was necessary beforehand to establish a dépôt of provisions as far inland as possible. Before the Hamilton River closed in the autumn, four Indians were sent up with loaded canoes to establish a cache. They reached a point about 100 miles from the coast, returning afterwards on the ice. In January Mr. Eaton and a party of men with sleds established a second cache about seventy miles up the river, and on March 6th a final start was made. Till May 19th, the party was continuously engaged in the arduous work of carrying on the supplies and outfit, which were thus advanced to a point on the plateau of the interior of peninsula above the Grand Falls. A continuous survey of the route had also been made to this point, where, after a delay of ten days, during which the ice broke up on the lakes and rivers, the exploration by water began.

The Grand Falls, it will be remembered, were visited by Messrs. Bryant and Kenaston and by the Bowdoin College party in 1891, being the terminal point of both these expeditions. Mr. Low writes: "These falls are probably the highest and grandest in America. The river here rivals the Ottawa in volume, and has a total fall of eight hundred feet in eight miles, with one sheer drop of three hundred feet where it descends from the table-land into a narrow cañon, with perpendicular rocky walls, through which it rushes for five or six miles, until it runs out into the wider and older valley."

On reaching Sandy Lake, where the south and west branches of the Hamilton unite, it was decided to employ this as a centre from which to carry on the work, and here the greater part of the stores were cached. The west or Ashounipi Branch with numerous connected lakes, was first examined; after which, again starting from Sandy Lake, a trip was made to Michikamow Lake, from which the

Northwest River flows. It was found to be about the same size as Lake Mistassini, but almost free from islands.

After returning to Sandy Lake, this place was finally left on August 1st. The route followed was by the south or Attikonok Branch of the Hamilton, to its head in a lake of the same name. Thence across the height of land to the Romaine River, which was descended nearly 200 miles, when a portage route was followed westward to the St. John River, by which the shore of the Gulf of St. Lawrence was eventually reached not far from Mingan.

The results of Mr. Low's work in 1893 and 1894 include the survey of over 2,000 miles of rivers and lakes in the interior of the Labrador Peninsula, combined with a geological examination of all the routes traversed. While, as heretofore supposed, the region as a whole is characterized by Archæan rocks, a very important area of Lower Cambrian, with a probable length of 500 miles, has been discovered and in part outlined. These rocks are rich in ores of iron. Observations of much importance in relation to the glacial period have also been obtained.

Although carried out in 1893, mention may in conclusion be made of an interesting piece of exploration in the Rocky Mountains by Professor A. P. Coleman, of which a short account and map have lately appeared.\* This was directed to the sources of the North Saskatchewan and Athabasca Rivers, with the special object of visiting Mounts Brown and Hooker, which have for many years been credited with being the highest summits of the Rockies. Professor Coleman states that the position assigned to Mount Brown on the maps is occupied by a comparatively insignificant mountain of about 9,000 feet in height. It proved somewhat difficult to recognize Mount Hooker, but in the vicinity in which it is indicated there are several summits estimated at from 11,000 to 13,000 feet in height.

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\* The Geographical Journal, London, Volume V, No. 1.

## GEOGRAPHICAL NOTES.

BY

GEO. C. HURLBUT, *Librarian.*

A WORLD'S EXHIBITION AT AMSTERDAM.—There will be opened at Amsterdam, in May, a World's Exhibition of Hotel Equipment and Travel.

The Committee of Advice to Group XI (Geographical Department), under the presidency of the distinguished geographer, J. Æ. C. A. Timmerman, makes the following announcement:

It is therefore our purpose to form, as far as possible, a complete collection of everything illustrative of travelling, in its historical development.

While exhibiting therefore all those modern means of conveyance, which are at present more and more nearing perfection, ample space will be reserved for exhibits representing the ancient and original means of conveyance and auxiliaries of travelling; as well as for ancient maps, charts, atlases, itineraries and illustrated works, accounts of travels and journeys, logbooks, instruments, models, drawings, etc.

SOCIÉTÉ DES AMIS DES EXPLORATEURS FRANÇAIS.—This society, authorised by decree of July 20, 1894, is established in Paris, at the house of the *Société de Géographie*, 184, boulevard Saint Germain.

Membership is open to every person who has attained the age of 21 years, without distinction of sex or nationality, on payment, once for all, of 100 francs.

The Society does not propose to found or to direct any scientific publication; nor will it form a library or make collections. Books, maps, photographs, or other documents, presented to it, will be made over to the *Société de Géographie*.

Specimens of natural history, ethnographical, and other special collections will be delivered to the State museums.

Gifts of instruments, arms, camping utensils, and other articles for the use of travellers and explorers, will be accepted.

Assistance will be rendered to travellers according to the nature of the case: by the loan of instruments, etc.; by subsidies to facilitate the immediate use of results, such as scientific observations, itineraries, and the like; by participation in the cost of production of books, maps, drawings and pictures; and finally, by advances which shall leave the explorer free to care for his health, without anxiety as to the means of existence.

LES NOUVELLES GÉOGRAPHIQUES, hitherto published in separate form as a supplement to *Le Tour du Monde*, ceased with the year 1894. Its place is supplied by *À Travers Le Monde*, which appears under the same cover with each number of *Le Tour du Monde*, but with its own paging.

CASSINI DE THURY.—The *Société de Topographie de France* has undertaken to raise a monument to Cassini de Thury, the author of the first great topographical map of France, and to publish a detailed account of his labours. A considerable sum of money has already been collected for the monument, and the *Société* has addressed to the geographical societies throughout the world a list of questions for studies on the history, progress and completion of the great work, its relation to similar enterprises in France and in other countries, etc.

THE ITALIAN GEOGRAPHICAL SOCIETY, on the 1st of January, divided its publication into two parts, the *Bollettino*, to be issued 12 times in the year, and resembling in character and contents the *Comptes Rendus* of the Paris Society and the *Verhandlungen* of the Berlin *Gesellschaft*; and the *Memorie*, which will contain the longer papers communicated to the Society, and will appear from time to time, as occasion serves.

A BELGIAN ANTARCTIC EXPEDITION, planned by Lieut. de Gerlache, is in process of organization at Brussels, but cannot take definite form until the return of M. de Gerlache from a sealing voyage to Jan Mayen on board the *Castor*, a Norwegian vessel which left Sandefjord early in March.

A SPECIAL NUMBER (13) of the *Annales de Géographie* is devoted to a Bibliography of the year 1893. This useful list includes pamphlets and articles published in magazines, as well as books and maps, arranged in two divisions: one embracing Physical Geography, Ethnography, Oceanography, and other general subjects; the other, works on the different parts of the world and their subdivisions. Occasional critical remarks add to the value of the record.

In a multiplicity of details there is always room for error, but it is, surely, by a perverse chance that, on p. 47, a note on Judge Daly's article, *Have we a portrait of Columbus*, makes him say in French the exact contrary of his plain statement in English. Alluding to the Lotto portrait, Judge Daly wrote:

It is not a satisfactory picture upon which to found the belief that it is a likeness of Columbus, and it is greatly to be regretted that the United States Government, in commemoration of the Centennial year, should have stamped it on two millions of

the silver currency of the country, and engraved it upon the postage stamps as a reliable representation of the person of the great discoverer. (*Bulletin Am. Geog. Soc.*, 1893, No. 1, p. 63.)

It should seem to be impossible to misunderstand the sense of this passage, but in the note referred to the feat is done in this style:

\*Of these (reputed portraits) there is one, however, which he (Daly) regards as more verisimilar than the others: it is the one which served as a model for the postage stamps specially issued on the occasion of the 4th centenary.

THE SOURCE OF THE MISSISSIPPI.—The *Revue de Géographie*, for January, publishes an article by M. E. Levasseur,† of the Institute, based upon Mr. J. V. Brower's volume, *The Mississippi River and Its Source*. This article is necessarily a résumé of the data brought together in Mr. Brower's history of the river and its exploration; and with this work, as M. Levasseur says, the debate concerning the source of the Mississippi was brought to a close. None the less, he briefly notices Captain Glazier's long-continued and temporarily successful effort to assume the character of a discoverer. The paper closes with a philosophical reflection:

Mr. Brower's exploration leaves no room for controversy. Glazier's attempt will have had the good result of hastening the conclusion and of enriching geography with the definitive map of the cradle of one of the world's great rivers. In this regard social sciences may envy the natural sciences. How happy would not the former be thus to put an end to discussion, and to enlighten public opinion by the demonstration of the fact, without leaving any dark corner in which error could still abide, and from it come forth into renewed activity!

THE ALASKA BOUNDARY MEASUREMENT IN 1893 is the subject of a paper by A. Lindenkohl, of the U. S. Coast and Geodetic Survey, in *Petermanns Mitteilungen*, Band 40, No. XII.

The work to be done was the survey of a strip of the coast, 30 geographical miles in width, between Portland Inlet on the south and Lynn Channel on the north. This strip covers the territory claimed by the United States as defined in the Anglo-Russian treaty of the year 1825. The task was divided into two parts, the Americans devoting themselves to the survey of the river valleys and the Canadians to that of the higher ground.

Three streams, rising in British Columbia, find their way to the

\* Il y en a un cependant qu'il considère comme plus vraisemblable que les autres: c'est celui qui a servi de type pour les timbres-poste spécialement édités à l'occasion du 4e centenaire.

† M. Levasseur's paper is an extract from the *Bulletin de géographie historique et descriptive*, communicated to the *Revue de Géographie* by authorization of the Minister of Public Instruction.

sea across this district: the Unuk, the Stikine and the Taku. Of these the Unuk, the most southerly, is also the least important. It flows south-westerly into Burrough Bay at the head of Behm Channel. In June, 1893, its current was so strong that it was with the greatest difficulty the canoes made head against it. Ordinarily the Unuk is cut up into narrow channels, separated by islands and sand banks, and its valley, which has a width of from a half-mile to a mile, is thickly wooded with alders, poplars and willows. The steep sides of the valley rise to an elevation of 3,000 feet and are clad with pines and cedars, and the crest of the mountains, at a distance of about two miles from the valley, reaches a height of from 4,000 to 6,000 feet.

The Stikine is perhaps, after the Yukon, the best-known and most important river of Alaska. In 1863 it was navigated only by the Indian canoes, and in those days many Indians and white men lost their lives on their way to the gold-diggings in the so-called Little Cañon, 80 miles from the mouth of the river. Now there is during the summer months regular steamboat communication between Port Wrangell, at the river-mouth, and Telegraph Creek, 45 miles above Little Cañon, and a pack-road unites this place with the head of Dease Lake, the central point of the Cassiar gold-district. From Telegraph Creek the Stikine flows first in a south-westerly, and then in a southerly direction, as far as the Great Bend, 25 miles above the mouth; it then turns to the west and finds its way to the sea through the Coast Mountains, which are between 6,000 and 7,000 feet in height. The valley of the river is nearly two miles wide, cut up by channels and heavily timbered, like that of the Unuk. It is shut in on both sides by steep walls of rock, covered with forests up to 2,500 feet and rising in regular slope from 500 to 1,500 feet beyond that elevation. The line of perpetual snow varies between 3,000 and 4,000 feet, according to the direction and inclination of the surface, and many of the steep higher points are bare of snow. Visible in every direction are sharp peaks, of from 5,000 to 10,000 feet in altitude, and Kate's Needles, the highest of five that were measured, was found to be 2,912 metres (9,554 feet) above the sea. The glaciers of the lower Stikine come down to the valley and almost to the sea-level. Four of these, on the north-western bank of the river, are named in order from the mouth up-stream, Popoff Glacier, Great Glacier, Mud Glacier and Hood Glacier; and there are many others on both sides of the river. Several members of the expedition expressed the opinion that every stream in this region had its origin in a glacier, and both



tradition and observation confirm the belief that there is a steady retreat of the ice-masses.

The climatic conditions were peculiar. Those of the party who were stationed at the mouth of the river had to endure almost uninterrupted rainy weather, while those on the boundary, only 30 miles away in a straight line, enjoyed warm weather with a clear sky; the explanation being that the sea-breeze parts with its moisture in passing over the Coast Range.

Here, as elsewhere in Alaska, fish abound, but, with the exception of brown and black bears, there is very little game. The land is divided into hunting districts, allotted to the various Indian tribes, and white men are forbidden to kill game within these precincts.

Every handful of earth from the river-bed shows traces of gold, and there was a time when the placer-washings were profitable, but now the worker could not make a dollar a day.

The Taku is not much inferior to the Stikine in length and volume of water, but it has attracted little attention.

It is formed by the junction of a northern and a southern branch, and flows in a south-westerly direction, for more than 40 miles as a true river, and for 18 as the fiord-like Taku Inlet, and empties into Stephens Passage, not far from the little city of Juneau. The survey included about half the course of this river, from the mouth to the junction of the two branches. The characteristics of the valley are similar to those of the Stikine, and there was no difficulty in ascending or in descending the river, the strong sea-breeze blowing constantly up-stream and the rapid current helping the descent. Dr. C. Willard Hayes, who was geologist of the Yukon Expedition in 1891, believed that light-draught steamers could ascend to the mouth of the southern branch, and that a pack-road, made from that point to the Ahklen Lake, and thence to the Yukon, would offer decided advantages over the one now in use by Chilkoot Pass.

The mountains in sight from the Taku valley appeared to be somewhat lower than those seen from the Stikine.

Four large glaciers descend to the level of the valley on Taku Inlet and the river; these are the Windham, the Foster, and the Twin glaciers on the north side, and the Wright on the south; and the north-western angle of the Inlet is generally filled with floating ice from the Foster glacier. These would all attract much more attention, were they not in the immediate vicinity of the famous Muir glacier, but the magnificent ice-walls of the Foster are within a pistol-shot of the sightseers on the excursion steamer.

Geologically, the greater mass of the Coast Range is composed of grey granite rocks, containing quartz, orthoclase, biotite and hornblende.

Mr. Lindenkohl's paper closes with some particulars concerning the measurement of Mt. Logan. This peak is in the British territory, 43 kilometres (26.72 miles), north-east of Mt. St. Elias, in N. Lat.  $60^{\circ} 34' 1''$ , W. Long.  $140^{\circ} 23' 49''$ . Two independent measurements were made, differing only 17 feet, and the accepted elevation is the mean of the two.

The altitudes of eight mountains were computed, as follows:

Mt. Logan, 19,514 ft. (5,948 metres).

Mt. St. Elias, 18,015 ft. (5,491 metres)

\* Mt. Vancouver, 15,665 ft. (4,777 metres).

Mt. Cook, 13,759 ft. (4,194 metres).

† Mt. Augusta, 16,920 ft. (4,243 metres).

Mt. Newton, 13,778 ft. (4,199 metres).

‡ Mt. Huxley, 11,070 ft. (3,631 metres).

§ Mt. Hubbard, 10,068 ft. (3,373 metres).

MR. PEARY'S WORK IN GREENLAND.—M. Charles Rabot, in an article on Recent Arctic Explorations, printed in the *Comptes Rendus* of the Paris Geographical Society (1894, pp. 428-437), briefly reviewed, in a strangely unworthy spirit, Mr. Peary's two expeditions to Greenland. Of the first (1891-1892) M. Rabot had this to say:

¶ Two accounts of this exploration have been published: one in the *Geographical Journal*, compiled from Mr. Peary's notes; the other by his only companion, Mr. Astrup, in the Year Book (No. 4) of the Christiania Geographical Society. These two documents and the maps which accompany them present contradictions which singularly weaken the authority of the journey. The map in the *Geographical Journal* establishes the insularity of Greenland. . . . Astrup's map is completely different. . . . Moreover, Astrup's report formally contradicts that of Mr. Peary. "We recognised," writes the former, "the probable extension of Greenland towards the north."

\* 15,665 feet=4,775 metres; 4,777 metres=14,689 feet.

† 16,920 feet=5,157 metres; 4,243 metres=13,921 feet.

‡ 11,070 feet=3,374 metres; 3,631 metres=11,913 feet.

§ 10,068 feet=3,069 metres; 3,373 metres=11,066 feet.

¶ Sur cette exploration deux relations ont été publiées: l'une dans le *Geographical Journal* rédigée d'après les notes de M. Peary, la seconde dans l'*Annuaire* (IV) de la Société de Géographie de Kristiania écrite par M. Astrup, l'unique compagnon de M. Peary dans cette expédition. Ces deux documents et les cartes qui les accompagnent présentent entre eux de graves contradictions qui affaiblissent singulièrement l'autorité du voyage. La carte du *Geographical Journal* établit l'insularité du Grönland. . . . La carte d'Astrup est complètement différente. . . . D'autre part, la relation d'Astrup contredit formellement celle de M. Peary. "Nous avons reconnu, écrit-il, l'extension probable du Grönland vers le nord." . . .

M. Rabot must read and judge for himself; but some obvious reflections should have occurred to him, when he undertook to weigh the testimony before him. Mr. Peary, a man of proved capacity and honour and experience, was the leader of the expedition and responsible for its result. There was no responsibility laid upon Mr. Astrup. He was free, if no scruple withheld him, to utter himself in any way that seemed likely to bring a temporary distinction to so young a man. He chose his time well, for his report and map were published when Mr. Peary was again in the frozen North, far beyond the reach of communication for an indefinite period; and this should have given occasion for doubt, if not for suspicion, in a critical mind.

M Rabot quotes, with peculiar simplicity, the words of Astrup:

We recognised the probable extension of Greenland towards the north.

Where and when did Mr. Astrup receive his authority to put these words into Mr. Peary's mouth?

M. Rabot's account of the expedition of 1893-1894 is even less creditable to him. He describes the attempt on the inland ice and its failure, and adds:

\* During this time Mr. Astrup, who had followed Mr. Peary in this second journey, explored in a sled the north-west coast of Greenland as far as Melville Bay in the south, and surveyed 300 kilometres of coast previously unknown. This topographical survey is the principal geographical result of the expedition. . . .

In this expedition, as in the preceding one, Mrs. Peary accompanied her husband, and a woman cook was also of the party. This circumstance did not contribute to maintain harmony among the explorers. On the other hand, the provisions were composed, in part, of spoiled canned goods, and this negligence produced the most regrettable consequences.

The checks encountered by the American polar explorations are generally due to faults of organization and equipment. . . .

However it may be with the Americans, it is certain that M. Rabot's misstatements are due to rashness and an unfortunate habit

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\* Pendant ce temps, M. Astrup, qui avait suivi M. Peary dans ce second voyage, explorait en traîneau le littoral nord-ouest du Grönland jusqu'à la baie Melville dans le sud, et relevait 300 kilomètres de côte jusqu'ici inconnus. Ce levé topographique est le principal résultat géographique de l'expédition. . . . Dans cette expédition, comme dans la précédente, Mme. Peary accompagnait son mari; une cuisinière faisait également partie de la mission. Cette circonstance n'a pas eu pour effet d'entretenir l'harmonie entre les explorateurs. D'un autre côté, les approvisionnements étaient, en partie, composés de conserves avariées et cette négligence a eu les conséquences les plus fâcheuses.

C'est généralement à des vices d'organisation et d'équipement que sont dûs les échecs des explorations polaires américaines. . . .

of mind. His errors have been corrected by Prof. William Libbey, Jr., in a letter printed in the *Comptes Rendus* for 1895, pp. 28-30, to the following effect:

It would be premature to express a positive judgment with regard to the contradictory opinions uttered by Lieut. Peary and Mr. Astrup; but I should incline to accept, without much hesitation, those of Lieut. Peary concerning the insular nature of Greenland, for he is a man of great experience and competent in geographical observations.

I should accept with even less confidence the points indicated by Mr. Astrup on his chart of Melville Bay. They are based on too small a number of angles and taken from only two positions in the bay, towards the shore which surrounds it. The panoramic views which he is to publish are a presentation somewhat similar to the shape of the coast, but nothing more. This work, performed after the return from the expedition to the interior glacier, is confined to Melville Bay alone and gives no idea of the northwest coast, as the article (of M. Rabot) affirms. Furthermore, it is not correct to say that this document is the only one, or even the most important one, of the expedition; it is, on the contrary, decidedly inferior to the thoroughly accurate work of Lieut. Peary on Inglefield Gulf, of which he has made the first complete chart.

I regret that the author of the article expressed himself as he has done concerning the presence of Mrs. Peary and the woman who accompanied her to take care of the little child, which was not yet born when she left the United States. Mrs. Peary showed herself much more capable of performing the voyage than several members of the expedition. Far from being an obstacle, her presence was an encouragement *until after* the return from the inland ice. It was then that the men began to show their discontent, and the animosity of some among them went so far that they would no longer eat at the same table with Mr. and Mrs. Peary. At the last, a conspiracy was formed with the intention of *abandoning* Lieut. Peary, and this would have succeeded, if he had not persuaded one of the malcontents to remain with him and his coloured man, Matt. Henson.

So far from the provisions having been bad, there was an abundance of nourishing food, as I know from having tasted it. It was as good as that of our own ship, and we did not find any fault. No polar expedition has been better equipped than that of Lieut. Peary.

GREENLAND FOR ART.—Julius von Payer, the surviving commander of the Austrian expedition which discovered Franz Josef Land, has planned what he calls an Artistic Expedition to the North Pole, by which is to be understood the East Coast of Greenland.

Painters are asking, he says, for new material on which to exercise their art, and he has determined to lead them to the wealth of beauty and of colour in the far north, where the picture of nature was ever entrancing to him during the years he spent in those regions. His plan, as described in the *Geographical Journal* for February, is to build a steamer of 400 tons, to be manned by Dalmatian seamen, with three officers, besides experts, engineers, Tyrolese marksmen, two landscape-painters, one animal-painter,

and a photographer. A studio will be erected at winter-quarters, and movable glass studios for use on deck and in special localities will also be provided; all furnished with means of heating and with electric light. Besides the studios, there will be a captive balloon. Payer's experience is that, even with a temperature of 50 degrees below zero, drawing can be done by the hour, and by moonlight or the northern light, as well as by day. The studios will afford protection for painting. Meteorological and magnetic observations will be made by the naval officers, while the naturalist collects specimens and the Tyrolese take care of the game.

Cape Franklin, at the entrance of Kaiser-Franz-Josef Fiord, recommends itself as the finest winter-quarters.

The expedition, which is to be sent out by Austria-Hungary, will start in June, 1896, if all goes well. The cost is partly covered, and Payer's enthusiasm is great enough, it may be hoped, to do the rest. His expedition, whatever may be thought of its value for art, must add to our knowledge of Greenland.

AN EXCURSION IN LABRADOR.—Mr. Charles E. Hite describes, in the *American Naturalist* for February, some explorations made in Labrador in the summer of 1894 by himself and Messrs. Howard Bucknell, G. H. Perkins and G. M. Coates. The party left New York in the steamer *Miranda*, which met with an accident and put in for repairs at Cape Charles, on the southern coast of Labrador. Here a few days were spent in making collections. The country is composed of low hills of granite, syenite and hornblende and there are remarkable examples of anticlinal and synclinal strata on the eroded surfaces of the nearly perpendicular cliffs along the shore. There are almost no trees, but the mosses are in profusion and reindeer-moss abounds.

From Capé Charles the party went to Separation Point, between the White Bear and the Eagle rivers, and started in two small boats to explore the former. On the second day they came to a cataract, 60 feet in height. At the foot of the fall a camp was made and two of the party remained, while Mr. Perkins and Mr. Hite went on, for a distance of 190 miles from the river-mouth. The stream was shallow, with many rapids, and frequently the water would not float the boat. After passing a rapid (called *rattle* by the Labradorians) there was usually an expanse of water for some distance. These broad stretches are called *stiddies*. At fifty miles from the coast, the banks of the river rise into hills, 1,400 to 1,600 feet in height.

These are covered with spruce and tamarack, and occasional

clumps of birch trees, and with beds of moss from a foot to three feet in depth. The dwarf cornel (*cornus canadensis*) abounds. The bed and sides of the stream were lined with erratic boulders, principally of labradorite. These increased in numbers as the river was ascended; the forest trees disappeared and the mosses became more scanty. After the first fifty miles there were no signs of animal life. The river source was in a chain of small lakes and on the banks grew willows, all bent down stream, the scratches on the bark indicating that the water had risen in the spring to a height of eighteen or twenty feet. In the lower portion of the river were peculiar semicircles of boulders of all sizes, transported by the ice in the spring and dropped in this fantastic position by eddies.

The Eagle and the Paradise rivers were next explored. The former is much deeper and narrower and more rapid than the White Bear and only half as long. The Paradise, which was ascended for forty miles, is very broad in comparison with the others, and it flows through a more level country, which has many plants not found in the hilly districts, and in the broad lakes there were water-birds not before seen on the trip. A dense growth of willow lined the banks. The water abounded with trout and salmon, and seals were found all along the river.

On the north side of Sandwich Bay is a mountain, 1,900 feet high, where several specimens of the caribou were secured. The principal rocks are hornblende, gneiss, syenite and granite. Veins of mica were found, besides iron ore in great quantities and malachite and many crystals of garnet. An outcropping of labradorite measured forty-two feet in length and three feet in width. Glacial striations with a southeasterly direction were discovered in several places around Sandwich Bay and on each of the rivers.

According to Mr. Hite, there are but few full-blooded Eskimos in southern Labrador, the inhabitants being a mixture of the Eskimos with various peoples, mainly English and Danish. To the question of the relationship between the Labrador and the Greenland Eskimos, Mr. Hite contributes an original observation on the flaps, or coat-tails, of the *timiak*, or coat. In Labrador, the front flap is but a few inches in length, while that at the back hangs down to the knee, and both are merely ornamental. The Greenland Eskimos, on the contrary, tie the two flaps together between the legs for protection against the cold. It occurred to Mr. Hite that the Eskimos, in travelling northward, conceived the idea of tying these flaps, and as the people parted company and split



into sections, one retained the flaps for ornament and the other preserved them for practical purposes.

There have been clearer explanations. It is conceivable that a Greenlander may have discovered the art of warming himself by tying his coat-tails, but the invention was surely not beyond the scope of a Labrador genius, already provided with flaps. Another explanation suggests itself. It appears that the Greenland Eskimos are intensely practical, while those of Labrador have the artistic and poetical temperament. May not the flying flaps of the Labrador man be worn in mournful memory of the sectional split which divided him from his Greenland brother?

**DETERMINATION OF LEVELS IN RUSSIA.**—M. Venukoff communicates to the *Revue de Géographie*, for February, the results of the labours of the Russian General Staff in determining the level of European Russia. The final *catalogue* is the work of Col. Rylké, who has drawn up a list of 1,090 stations, the precise elevation of which was measured by several officers, with the same instruments and by the same method.

The lines of operation were distributed along the railways from the Baltic to the Black Sea and along the Ural River. At seven points the Russian operations were connected with the German and the Austrian.

The total length of the surveys exceeds 13,000 kilometres (8,080 miles), and more than 11,000 kilometres (6,835 miles) were twice measured. Solid monuments were set up at the chief stations of the railway network, to serve as fixed points for future levellings.

Such is the general low elevation of the surface that no one of the positions determined exceeds 338 metres (1,109 feet) above the sea, and the figures range for the most part between 110 and 150 metres (361 and 492 feet).

The most important geographical result of this great survey is the well-ascertained identity of level in the three seas, the Baltic, the Black, and the Sea of Azof; but it has yet to be determined whether this is the same as that of the ocean.

**A YEAR'S OBSERVATIONS ON THE PAMIR.**—M. Emil Muller sends from Tashkent to the *Société de Géographie*, of Paris, a note on the observations regularly made from September, 1893, to August, 1894, at the Russian post of the Pamir, at the confluence of the Murghab and Ak-Baïtal rivers, in N. Lat.  $38^{\circ} 8' 30''$ .7, E. Long.  $73^{\circ} 57' 0''$ .5.

The elevation of the post above the level of the sea is 3,700 metres (12,139 feet). M. Muller's table reads (with the addition of the values in degrees of Fahrenheit and decimals of an inch):

MONTHS.	MEAN TEMPERATURE.		PERCENTAGE OF CLOUDINESS.	PRECIPITATION IN		PREVAILING WIND.
	Cent.	Fahr.		Millim.	Dec. of in.	
September...	+8°	46°.40	32	2.0	.0787	South-west
October.....	-1°	30°.20	22	0.0	.0000	do
November....	-8°.1	17°.42	30	0.1	.0039	do
December....	-12°.7	9°.14	47	4.2	.1653	do
January.....	-24°.9	-12°.82	56	2.8	.1102	do
February....	-17°.8	-0°.04	50	0.9	.0355	do
March.....	-5°.9	21°.38	44	0.7	.0276	North-east
April.....	+1°.4	34°.52	44	9.4	.3700	do
May.....	+5°.4	41°.72	42	12.4	.4881	do
June.....	+12°.1	53°.78	35	4.7	.1851	do
July.....	+16°.8	62°.24	50	11.3	.4449	do
August.....	+13°.6	56°.48	19	0.0	.0000	

According to M. Muller, the Pamir post is, of all the points in the Russian empire, the one which has a climate most nearly resembling that of the Transbaikal region, but its winter is a little less cold and its summer somewhat cooler. The lowest temperature ( $-44^{\circ}$  Centigrade= $47^{\circ}$ .20 below zero, Fahr.) was recorded in January and the highest ( $27^{\circ}$ .5 Centigrade= $81^{\circ}$ .50 Fahrenheit) in July. Frosts occur in the early morning in every month. Notwithstanding the high percentage of cloudiness, the quantity of water which falls is surprisingly small, not more than one-seventh of that at Tashkent and only a third of that which falls in the oasis of Khiva, held to be the spot the most poorly supplied in the empire; and the wonder is what feeds the glaciers of the Pamir.

The south-west winds are never so strong as those from the north-east, which frequently blow in tempests; and in August the wind is always gentle and may blow from any quarter.

On the subject of the scanty glacier supply, M. Muller's translator remarks that it gives facilities for the study of ice-strata of a formation much more ancient than those of ordinary glaciers, particularly with regard to the cosmic dust contained in them and the extra-terrestrial materials added to the mass of our globe.

COTTON IN TURKESTAN.—Consul-General Jonas, of St. Petersburg, gives in the *Consular Reports*, No. 172 (for January, 1895), some figures on the growth of cotton in Russian Turkestan. The

native variety is of poor quality. It was in 1883 that the American seed was introduced, and the crop from it the next year was 7,000 puds (252,000 lbs.), raised on 205 dessiatines (553 acres). In 1893 the product of American cotton had risen to 2,000,000 puds (72,000,000 lbs.) from 100,000 dessiatines (nearly 270,000 acres).

The quantities carried to the Russian market by the Trans-Caspian railway for the years 1888-1893 were: In 1888, 873,092 puds; in 1889, 1,470,503 puds; in 1890, 2,673,267 puds; in 1891, 2,626,110 puds; in 1892, 3,026,518 puds; in 1893, 3,588,025 puds. The Turkestan product of American and native cotton for 1893 was, therefore, 129,168,900 lbs. Mr. Jonas puts the entire consumption of cotton in European Russia, in 1892, at 13,740,518 puds, and in 1893 at about 2,000,000 puds less.

The table of Foreign Weights and Measures, prefixed to the present Report, would be improved by revision. The foreign words are often misspelled and misplaced, as in *arobe*, said to be used in Paraguay, where no such word exists; the true form, *arroba*, being printed two lines below.

There is a *pie*, of the Argentine Republic, and another, Castilian; not something to eat, but simply the *pie*, or foot, of about 11 English inches. The word should have been translated.

The Russian *dessiatine* is correctly valued at 2.6997 acres, but the Spaniards will learn with surprise that they also have a *dessiatine*, equivalent to 1.599 bushels.

The *klafter*, which is German and Austrian, is entered as Russian, and, generally, things are not what they seem.

TONKIN AND THE RED RIVER.—Lieut. Léon Escande, at a meeting of the Paris Geographical Society in February, described his ascent of the Red River in 1893 in the gunboat *Moulun*, at the season of low water as far as the Chinese frontier, 30 miles to the north of Lao-Kay. The rapids are caused, it appears, by the compression of the river between barrages of rock and banks of shingle, and there is always a deep channel with a swift current. The arrival of the *Moulun* in Yunnan was hailed with satisfaction by the Chinese merchants, and M. Escande, on a second voyage, made the distance from Haiphong to Lao-Kay and back to the sea in seven days. His conclusions were, that by works involving but a moderate outlay the river might be made navigable throughout the year, from the sea to Yunnan, and that by adopting a system of towage navigation might be opened without delay.

A JOURNEY TO MECCA.—M. Gervais Courtellemont went to Mecca in 1894, charged by the Governor-general of Algeria with a mission to the Sherif. He gave an account of his journey at a meeting of the Paris Geographical Society on the 7th of December.

The peril of the enterprise was lessened by the presence of a Mussulman companion, Hadj Akli, an Algerian who had already made twenty pilgrimages to the Holy City; but M. Courtellemont assumed the dress and the character of a poor Moslem, and spent the three days of the voyage from Suez to Jiddah on the deck of the steamer among the traders, and camel-drivers and slaves.

Jiddah, with its excessive humidity, its legions of mosquitoes and its scarcity of water, was an intolerable place, and the Turkish police watched the stranger with suspicion. It was some time before he was asked to dinner, and his clumsiness in handling rice with his fingers did not recommend him. When he got home, Hadj Akli scolded him: "You're not very bright," he said, "you don't even know how to behave yourself at table." In the night his host, Si Ali, came to express his fear that the Frenchman would never get back alive, if he persisted in going on; but two days later the start was made in the afternoon, so as to travel the fifty miles by night and reach Mecca in the morning.

The night was bitterly cold. At six o'clock in the morning the travellers entered the Holy City and picked their way through the myriads of sacred pigeons in the streets to the mosque, where M. Courtellemont made the prescribed circuits of the Kaaba and religiously kissed it. Neither then nor at any time during his stay does he appear to have been in danger.

He found the valley of Muna, where the innumerable victims are slaughtered for sacrifice, not by any means a repulsive place. The winds and a process of nitrification dispose of the remains.

The population of Mecca, exclusive of the garrison, is composed of 80 per cent. Indians and Javanese, 18 per cent. Arabs and 2 per cent. Turks; all supported and well supported by the pilgrims.

Those from Algeria alone numbered, in 1894, no less than 9,000, and each one was required to show, before he was allowed to start from home, that he had 1,000 francs in hand. All this money is left in the Hedjaz, for the pilgrims always return penniless.

The commerce of the Hedjaz is almost exclusively in the hands of the English, for whom the annual pilgrimage is a serious matter of business. M. Courtellemont reports the current belief of the Arabs that the English are on the point of conversion to the true faith, and then, they say, the empire of the world will belong to Islam.

The attempt at disinfection in Mecca, made in 1894 by the erection of a building for the purpose, has failed. The house was about 40 feet square, and wholly insufficient for disinfecting the garments of 250,000 pilgrims, the average yearly number, and it was built in the very centre of the city. It was hardly finished when it was destroyed by the more intelligent of the Arabs.

One by one the forbidden cities of the world begin to lose their glamour.

EXPLORATION IN BORNEO.—A scientific expedition to Western Borneo, undertaken at the close of the year 1893, returned to Europe in November, 1894. The leader of the party was the Swiss naturalist Büttikofer. His companions were Messrs. Van Velt-huyzen, Nieuwenhuis, Hallier and Molengraaf. The results of their work are summarised in the *Geographische Nachrichten*, of Basel, 1894, No. 17, pp. 267-269.

The start was from Pontianak, just below the equator. The Kapuas River was ascended beyond Sintang to a garrisoned post named Smitau, which was selected as the central station for supplies and the storehouse of the collections.

Beyond Smitau the river, hitherto broad and stately, became contracted, and with a swifter current, and the country took a more richly varied aspect. Some mountain peaks, such as the Kenepai, were found to attain an elevation of 1,100 metres and more (3,600 feet). At Putus Siban, a village on the upper stream of the Kapuas, the Dutch Resident, Tromp, had called together a number of the chiefs to explain to them the objects of the expedition, and display the stuffed birds and the specimens of snakes and fishes and beetles already obtained. The chiefs were interested and readily offered their support. From this point Büttikofer and Hallier proceeded to the foot of Kenepai, to make zoological and botanical excursions on the mountain. The neighborhood abounded with orang-utans, and on the very first morning Büttikofer, walking near the house in his slippers and night-dress, shot one of them. The six weeks spent on the mountain enriched the collections, and the Dyak children were very useful in hunting for beetles.

Returning to Smitau, Büttikofer's next excursion was to the upper Mandai River, which he ascended, at first in a steam launch and then in a rowboat, as far as Nanga Raun, a little mountain village, consisting of two great houses. One of these rested on no fewer than 568 piles, 5 metres (16 feet) in height; it was 150 metres (492 feet) in length, and enclosed the homes of 39 families.

From this village the next stage led to the mountain Lyang Kulung, reported to be about 6,000 feet high. It proved to be only about 3,700 feet. At the base of it, in a perpendicular wall of rock, was a grotto, where there were many rhinoceros tracks. The rainy weather interfered with the zoological collections, but the plants were all the richer and more numerous.

It was difficult to work through the forest, where the roots of the trees and bushes formed a labyrinth six feet in height above the ground; and everything was covered with a layer of moss so thick that branches not larger than one's finger had the apparent diameter of a man's body. Six weeks were spent on Lyang Kulung.

The original plan was to push to the centre of the island and even to cross it, but the difficulties were many, and the employment of force against the natives was out of the question. Mr. Büttikofer was satisfied with what had been accomplished and returned to the coast.

Further explorations are reported in *Petermanns Mittheilungen*, 41 *Band*, II. After the return of Messrs. Büttikofer and Hallier, Prof. Molengraaf terminated his geological work by crossing the southwestern part of the island. From Sintang, at the confluence of the Kapuas and its tributary, the Melawi, he ascended the latter to Ulu Kowin, whence he crossed the watershed to the source of the Katingan River and descended this to Mendawai, where the river enters the Java Sea. The journey occupied the time from the 15th to the 30th of October. Prof. Molengraaf returned to Batavia by way of Banjarmassin.

Shortly before this Capt. Van der Willigen, of the Netherlands-India General Staff, crossed the watershed between the eastern and southern coasts. He also followed the Kapuas and Melawi Rivers, and the Ambalau, the affluent of the latter on the left, as far as the limit of navigation, and from there travelled by the Dayak footpath over a pass of 1,000 feet in height. A little more than a mile from the source of the Benjawi, which flows into the Ambalau, he came to the source of the Mahiko, a tributary of the Kahayan, which empties into the Java Sea. At Tumbang Anoi he met the Dutch Controllers of East and West Borneo, who were holding a conference with Dayak chiefs in order to settle a number of tribal feuds. He then followed the Kahayan for a time, turned eastward to the Barito, and made his way to Banjarmassin. His journey lasted from April 11 to the 25th of July.

THE RUSSIANS IN ABYSSINIA.—A scientific expedition to Abyssinia has been sent out by the Russian Geographical Society.



The leader is Lieut. Nicholas Leontief, of the Imperial Guard, and the second in command is Capt. Zvyagin, of the artillery, who will make the astronomical observations and map the country. Dr. Elizeef and M. Agapof will study the geology and make collections in natural history.

From Obok, the French post on the bay of Tajurra, the party will cross to Ankober and Antotto, and thence into Northern Abyssinia and the Sudan.

THE NILE AND THE CORVÉE.—Sir C. C. Scott-Moncrieff, who must be supposed to have spoken with knowledge, opened a lecture at the Royal Institution, on the 25th of January, with these words:

I am to speak to you to-night of the Nile, and I think I may fairly say it is the most famous river in all the world; famous through all the ages, for the civilization that has existed on its banks; famous for its mystic fabulous rise, about which so many sages and philosophers have pondered; famous for its length, traversing one-fifth the distance from pole to pole; famous, and apparently destined to be famous, for the political combinations that ever centre around it.

A little further on, it is said that the whole distance by river from the Victoria Nyanza to the sea is about 3,500 miles. If the length of the Nile, so understood, is one-fifth of the distance from pole to pole, the whole distance must be five times 3,500 miles=17,500 miles; a measurement fit to disturb the minds of men and make Sir C. C. Scott-Moncrieff not less famous than the Nile.

Of several other strange statements in the lecture, the following, on a subject interesting to all men, deserves notice:

I have already mentioned the cruel hardships of the *corvée*, the serf army of 85,000 men, who were employed in the canal clearances from January to July, nearly half the year. I believe this institution was as old as the Pharaohs, and it was not easy to abolish it. But of course it went sorely against our British grain. Little by little we got money to enable us to pay our labour. By an annual outlay of £400,000 this spring *corvée* has entirely ceased since 1889, and now the Egyptian labourer carries out these clearances in as free a manner as his brother in Middlesex, and gets paid for his work.

On the 29th of March, 1891, the British Government published a similar statement in a letter from Sir C. C. Scott-Moncrieff, in these words:

In 1884, the forced, unfed and unpaid labour of the peasantry amounted to 85,000 men working for 60 days. In 1890, perhaps for the first time in all history, there was no *corvée* in Egypt.

On the 26th of April, 1893, Mr. T. G. Bowles asked the Under Secretary of State for Foreign Affairs whether the system of forced labour, known as *corvée*, had subsisted during the ten years' English

occupation of Egypt, and had not yet been abolished, and whether Her Majesty's Government proposed to take any measures for the abolition of this form of involuntary labour.

Sir E. Grey answered that it had so subsisted, and added:

Her Majesty's Government do not propose to interfere.

In April, 1894, the Parliamentary Report on Egypt stated (p. 15):

In Upper Egypt 32,720 men and 1,672 sheikhs were called out for an average of fifty days. In Lower Egypt 49,059 men and 3,164 sheikhs were called out for an average of eighty-two days.

The whole of these men were called out in the usual manner, Pharaonic, Ptolemaic and British, by means of the mudirs, or native governors.

It is an easy matter to calculate, from the figures given in the Blue Book for 1894, the amount of labour, forced, unfed and unpaid, extorted from the Egyptian peasantry by an institution sorely against the British grain.

The men called out in Upper Egypt were 34,392,	
whose work for 50 days represents.....	1,719,600 days.
The number for Lower Egypt was 52,223 men for	
82 days, equal to.....	4,282,286 "
Total.....	6,001,886 days.

Sir C. C. Scott-Moncrieff and the British Government do not seem to understand each other.

**THE DEATH OF EMIN PASHA.**—It was in October, 1892, that Emin Pasha arrived with a small force at Kinena, about 150 miles to the northeast of Kibonge, on the right bank of the Congo. At Kinena, Said ben Abedi, who accompanied him, proposed to go on to Kibonge, leaving Emin to take some rest with his men. This was done, and Emin busied himself for two or three weeks, according to the entries in his journal, in arranging his collections. The last entry bears the date of October 27, and it is supposed that he was killed the next day.

Mr. R. Dorsey Mohun, U. S. Agent in the Congo Free State, contributes to the *Century*, for February, an account of Emin's death, written down from the confession of his murderers. Mr. Mohun, while at Kassongo in April, 1894, was informed by his sergeant Omari that next day a caravan would arrive, and that in it were the two men who had killed Emin Pasha. The men, Ismailia and Mamba, Arab slaves, were arrested on arrival, and Mr. Mohun went with Omari to the guard-house to take their confessions.

They professed innocence, and Mr. Mohun sent Mamba to a separate room with Omari, instructing the latter to return in half an hour and report that Mamba had confessed that he and Ismailia had had a hand in the killing. Meanwhile Mr. Mohun questioned Ismailia, but to no result. Omari returned, as agreed upon, with Mamba's confession, and then Ismailia fell on his knees and begged for mercy, declaring it was true that he had helped to kill Emin, but that he only obeyed the orders of a big chief. Mamba was then brought back, and the story was told by Ismailia.

He and Mamba went with Said ben Abedi to the Chief Kibonge. Two days after they arrived, Mamba was sent back with a letter to Emin, and in the night Kibonge sent Ismailia with a letter to the Chief Kinena. After twelve days' journey Ismailia arrived, only ten minutes behind Mamba. The letter to Kinena was an order to kill Emin, and the two carriers were to give their assistance.

Emin was found sitting on the veranda of Kinena's house, writing at his table. The letter brought by Mamba was in front of him, and he was in good spirits at the thought of a start the next morning for Kibonge. Kinena came up with a few men who carried guns, and stood near the pasha, reading the letter which Ismailia had brought. When he had finished, he said to Emin: "Pasha, you leave to-morrow for a long march. Send your men into the plantations to get all the provisions you need, and you must not think of paying me for them. They are my present to you in return for the many things you have given to me and my women." Emin thanked him and had the men called by bugle. They were armed, and Kinena suggested that the arms should be left in the veranda, as the women in the plantations might be frightened by the sight of guns. After the men were gone, Kinena talked for a while with Emin and then made a sign to Mamba and Ismailia, who seized the pasha by the arms. He asked what they meant, and Kinena, looking at him, told him that he had to die. Emin answered: "What do you mean? Who are you that you can give orders for a man to die?" Kinena replied: "I do not give the orders. I receive them from my chief, Kibonge."

Three of Kinena's men came up and helped to hold Emin. He then said it was a mistake, and that he had a safe-conduct from Kibonge. Kinena then showed his letter, with the order for death. Emin read it, and said: "Well, you may kill me, but there are many who will avenge my death." He spoke of his child, two years of age, and asked that she should be sent to Said ben Abedi.

Kinena made a sign and the pasha was laid on his back, with a

man at each arm and leg. Ismailia held his head, and the fatal stroke was given by Mamba. Emin's head was sent to Kibonge; his body was thrown into the bush.

Mr. Mohun took Ismailia and Mamba to Nyangwe. On the way Ismailia gave information that led to the arrest of another of Emin's murderers, a man named Ferrani, who broke down when confronted with Mamba and Ismailia and confessed his crime. The three were hanged in May, 1894, in company with the Arab chiefs who had massacred the Hodister expedition.

The little girl and her mother are at Kibonge, now a post of the Congo State, and the child will be cared for by the State.

Mr. Mohun does not believe that Said ben Abedi or Tipu Tip had anything to do with the death of Emin Pasha.

A LETTER FROM DR. DONALDSON SMITH, dated December 14, on the Shebeyli River, has been received by the Associated Press. He had penetrated five days' march beyond Sheikh-Husein, when he was met by a large armed force of Abyssinians, who had orders from the Emperor Menelik to stop the advance of the party. Dr. Smith tried to evade the order by seeming to comply with it for a short distance, and then resuming the original line of march; but in a few days he was confronted by the same force and ordered to return.

In his letter he reports a rich discovery made "down South." He had heard of a river that ran under a mountain where the god Waco had carved a palace for himself. He pushed in the direction of this mountain and discovered the most beautiful subterranean passage it would be possible to imagine:

A large tributary of the River Juba had carved a way for itself under a mountain a mile in length. On both sides of the stream were great vaulted chambers from twenty-five to forty feet high and supported on massive columns. The columns were most superbly carved by the waters, and many of them, uniting, would form long arched passages. I have named these the Caves of Tyndlawn. I believe them to be the most remarkable caves of the kind in the world.

MT. RUWENZORI.—The London *Times*, of March 15, reports the substance of a lecture by Mr. G. F. Scott Elliot on his botanical exploration of Mt. Ruwenzori, and the country to the north of the Albert Edward Nyanza.

Mr. Elliot entered the region by the route from Mombasa to Uganda. The country northeast of the Victoria Lake he described as a rolling grassy plain, 6,000 feet above the sea-level and well adapted for colonization. He went west from the Victoria Nyanza

to Mount Ruwenzori, which is said to have an altitude of 18,000 feet, and spent four months in exploring that district under the great disadvantage of a dense cloud hanging over the mountain the greater part of the day, which often prevented the party from seeing more than 50 feet ahead. The sides of the mountain were clothed at the base with a thick growth of trees resembling the laurel of the Canary Islands; above that bamboos to the 10,000 feet level; and above that again what the explorer could only liken to a Scotch peat moss, into which the traveller sank at every step a foot or more. Large trunks like those of *Erica arborea* of the Canary Islands, but indicating trees 80 feet high, were noticed. Among other plants noticed were a viola, a cardamine, a gigantic lobelia, attaining a height of 5 feet or 6 feet, and a species of *hypericum* resembling that found in the Canaries; indeed, the similarity of the flora to that of the Canary Islands was remarkable. He ascended Ruwenzori to the height of 13,000 feet. Above 10,000 feet some of his porters could not sleep without suffering, and he climbed the other 3,000 feet with a reduced number of men. Evidences of animal life were found up to 7,000 feet, and among the animals were a species of water-buck, a new chameleon, a new snake and several new insects.

Mr. Elliot discovered that the Kagera River was navigable, and he thought that the route from the mouth of the Zambezi, by way of Lakes Nyasa and Tanganika to the Victoria Nyanza, would do more for international interests than a railway from Mombasa.

THE CONGO RAILWAY.—*Le Mouvement Géographique*, of March 5, publishes a letter of Father de Hert, of the Society of Jesus, describing a journey made by himself and five Sisters of Charity on the Congo Railway on the 23d of July, 1894.

He was surprised at the magnitude of the work and at the difficulties encountered and surmounted in laying the road-bed and in carrying it through ravines and hills and valleys.

He mentions particularly the cuttings in the Mpozo ravine, where the line is suspended on the side of the mountain, the bridge over the river, the numerous curves described in climbing the Palaballa and the viaduct across the ravine of La Chute sustained by piers 100 feet high, of solid masonry.

On Palaballa the travellers could see the road turning and returning on itself seven times.

It took fourteen hours to accomplish the journey from Matadi to the Monolith, a distance of 40 miles. The coal did not burn well,

the train ran off the track in one place, and in another there was a collision with a freight car; but nobody was hurt.

The editor of the *Mouvement Géographique* remarks, truly enough, that the caravans required three days to make these 40 miles and that, before long, the fourteen hours will be reduced to three or four; and he presents, in a Supplement, a map showing on a scale of 1:250,000 the first 175 kilometres (109 miles) of the road, from Matadi to Kimpesse.

THE VON GÖTZEN EXPEDITION.—Additional details concerning this expedition (BULLETIN No. 4, 1894, pp. 557-560) are published in the *Mouvement Géographique*, of February 17, as given by Count von Götzén.

The country of Ruanda is well populated by a fine race of Galla origin. It was formerly rich in herds of cattle, remarkable for their immense horns, but most of them were carried off by a plague a few years ago. The title of the Chief of Ruanda is *Kigeri*. He possesses a dozen residences which he occupies in succession. The explorers met him on the upper Kagera River, again on the extreme frontier of the Congo State, and once more not far from the Kivu Lake. He treated them always with hospitality. The Arabs have frequently tried to establish themselves in Ruanda but without success, and in all this region, including Karagwe, they were not seen by the expedition, except at Kafuro, where three or four Tabora traders are settled.

Lake Kivu lies almost midway between Tanganika and Albert Edward, and wholly within the Congo State. It is nearly oval in form, with its greater extension from north to south, and it is shut in on the east and the west by the cliffs of the great *fault*, which encloses also the Albert Edward and the Tanganika. In the southern part of the lake is the large Island of Kuisui, almost equally divided by the parallel of 2° S. Lat.

On the 27th of June, 1894, the expedition climbed the steep slopes of the rocky crest, which divides the streams of the Tanganika basin from those of the Congo, and constitutes the mountain knot that marks the limit of the basin of the ancient interior sea. Three months were spent in the march through this unknown country of the Kivu Lake. The first part of the journey was through a mountainous region, sometimes at an elevation of nearly 9,000 feet, and for four days the men suffered with the cold, the mercury going down at night to 37 degrees. They passed through forests of gigantic bamboos, but the land was thinly peopled by the Buttenbo. The forest limit was attained in E. Long. 28° 10'.



The vegetation was not so dense as in the part described by Stanley and the foliage was nowhere thick enough to shut out the rays of the sun, while picturesque glades diversified the landscape. The inhabitants are called Bulegga. The first important village was Mkashi, with a population of 5,000, under a negro chief named Kawaware, who spoke Arabic. He was astounded at the sight of white men arriving from the East, and eagerly welcomed them with assurances of his complete submission. He told them that the Msenge (Belgians) were hunting down the Arab chiefs.

Mkashi is in the forest on a southern affluent of the Lova River. This, at the point where it was crossed, was already a considerable stream, 1,500 or 1,600 feet in width. It flows from the east and descends from the plateaux by a succession of rapids. Farther down, it receives two affluents from the northeast, the Oso and the Luvuto.

In the latter part of the march the expedition fell short of provisions, but it was relieved by a party under Lieut. Simons, sent forward from Kirundu to meet the white men reported as on their way from the East.

From Kirundu, the descent of the Congo was a kind of triumphal procession till the Germans embarked on the Portuguese mail steamer on the 19th of December.

Count von Götzen's crossing of Africa is, according to the *Mouvement Géographique*, the quickest of the thirteen so far accomplished. It was made in 11 months and 8 days.

ESCAPE OF SLATIN BEY.—Slatin Bey, who was captured with his force of 700 men by the Mahdi, in 1883, and has ever since been a prisoner in the Sudan, escaped from Omdurman on the 20th of February and reached Cairo on the 19th of March.

Details of the arrangements for the rescue of Slatin are kept back, out of consideration for the Europeans still in the hands of the Khalifa.

Two Arab guides, with their camels, were in readiness outside of Omdurman on the evening of February 20. Slatin joined them, and the flight began. In 21 hours the fugitives made 120 miles, in a straight line from the starting point, but actually much more, for they had kept under the lee of a range of hills to avoid discovery. They were pursued and twice, while they lay hidden, saw their enemies pass by to the northward. They left the direct route, for greater safety, and turned to the north-east. Once they halted for five days in the desert.

On the twenty-fourth day Slatin reached Assuan, where he was beyond reach.

Rudolph Slatin is an Austrian, 38 years of age, and half his life has been spent in the East. In 1882 he was Governor of Darfur, the province first affected by the Mahdi revolt, and his heroic valour in fighting the insurgents made him famous throughout the Sudan. He was treated with alternate kindness and cruelty by his captors.

He reports that the power of the Khalifa is waning, but that the military organization is unbroken and can only be crushed by a strong force. The position and movements of the Italians cause great anxiety at Omdurman.

Notwithstanding all he has endured, Slatin is full of vigour and energy and in apparently perfect health.

SCIENTIST.—There has lately been discussion in England concerning the unlucky word, *scientist*. Prof. Huxley, in his haste, puts it on a level with *electrocution*. Sir John Lubbock also condemns the word and would replace it by *philosopher*. Lord Kelvin and Lord Rayleigh prefer *naturalist*, in its wider sense; and Dr. Albert Günther suggests that *scientist* be reserved to denote the dabbler in great scientific questions. *Nature*, of January 10 (p. 253), solemnly records its protest against the offender:

The word is never allowed knowingly to appear in contributions to *NATURE*.

Mr. Grant Allen does not defend *scientist*, but he considers with reason that, as languages grow irresponsibly, it is pedantry to object to a new word when it is used by a majority of persons. Mr. Alfred Russell Wallace holds that the word is useful, and that the objection to it comes too late in the day.

This is a sensible conclusion. The word will keep its place in the language, outside of *Nature*, and it must grieve every one to think that Dr. Günther himself may live to be known as a scientist.

## WASHINGTON LETTER.

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WASHINGTON, MARCH 25, 1895.

SMITHSONIAN INSTITUTION.—The XXXVth volume of the Smithsonian Miscellaneous Collections will contain the Smithsonian Meteorological, Geographical, and Physical Tables. These tables are intended to replace in modernized form and with newer knowledge the Guyot Meteorological and Physical Tables first published in 1852, and which has since been a standard work of reference for investigators. The first part of the volume, the Meteorological Tables, was published last year. The Geographical Tables prepared by R. S. Woodward, formerly of the Coast Survey but now of Columbia College, have recently been published. The introductory part (about half the volume) is divided into seven sections under the heads, Useful Formulas, Mensuration, Units, Geodesy, Astronomy, Theory of Errors, and Explanation of Source and Use of Tables. The Physical Tables are now being prepared by Prof. Thomas Gray.

The explorations of the Smithsonian Institution during 1894 were carried on chiefly through the Bureau of Ethnology and the National Museum. The most extended of these were in New Mexico and Arizona. Another party spent several months in the Indian Territory and Oklahoma. Other collaborators visited northern Wisconsin and northeastern Minnesota. In the eastern United States archæologic investigations were continued in New Jersey, Pennsylvania, Maryland, Virginia, central Ohio and Tennessee. These are regarded as of special interest, and results will in due time be made public. Explorations and studies were made also in Kashmir, India, the Seychelles and adjacent islands by Dr. William L. Abbott; by Professor Cook in Liberia; by Consul-General Crawford in Finland.

A volume of Contributions to Knowledge is now passing through the press, the subject being Oceanic Ichthyology, by Dr. G. Brown Goode and Dr. Tarleton H. Bean. It is an exhaustive dissertation on the fishes of the ocean depths and particularly those of the North Atlantic Basin.

Prof. Langley says that he had hoped to complete the publication of the photographic volume on the moon; but the science of

photography has not yet progressed sufficiently to meet the requirements of the work.

In spite of the persistent effort to reach all who might be interested or who might wish to contribute to the competition for the Hodgkins \$10,000 prize and minor premiums, for treatises on the nature and properties of atmospheric air in connection with the welfare of man, it was found that in so wide a distribution the circulars had in various instances failed to reach those for whom they were intended. This fact led to the extension of the time for competition from July 1 to December 31, 1894. Up to June 30, 1894, 259 memoirs, printed and manuscript, had been received, representing correspondents in the United States, Mexico, England, Scotland, Norway, Denmark, Russia, France, Belgium, Germany, Austria-Hungary, Servia, Italy, and British India.

The Institution has recently published Giuseppe Sergi's treatise entitled "The varieties of the human species. Principles and method of classification." Dr. Sergi is professor of anthropology in the Royal University of Rome, and has made numerous and valuable contributions to this literature.

**CONSOLIDATION OF GOVERNMENT SURVEYS.**—The project of consolidating the government surveys, that is to say, the Geologic Survey, the Coast and Geodetic Survey, the Land Office Surveys, and the Hydrographic Office Surveys, failed to get the approval of the Congress just closed. The Joint Commission to inquire into the status of laws organizing the executive departments advocated the consolidation of these into two surveys; recommending that the Geological Survey, the land work of the Coast and Geodetic Survey, and the surveying done under contracts from the General Land Office be organized under one head, and the hydrographic work of the Coast and Geodetic Survey and of the Hydrographic office of the Navy Department under the other, abolishing at the same time the office of Surveyor-General in the various public land States.

**TOPOGRAPHIC MAPS.**—A proposition to distribute the topographic map of the United States to public schools corresponding in grade to the grammar, normal and high school, academies, colleges and universities failed to receive the approval of Congress; but provision was made for the general sale of the sheets, or of any separate sheet, at the cost of publication.

**BOUNDARIES.**—Congress at its last session passed a joint resolution relating to the British Guiana-Venezuela boundary dispute,

declaring that the President's suggestion made in his last annual message that Great Britain and Venezuela should refer their dispute to friendly arbitration, be earnestly recommended to the favorable consideration of both parties.

This dispute has grown out of an indefinite description of boundary lines in the treaty which effected the purchase of Guiana from Holland by Great Britain in 1814. Geographers and travellers invariably asserted that the Essequibo River, a natural boundary, was the dividing line; but this line had never been formally mentioned, and the omission has been a source of trouble ever since Venezuela became an independent republic in 1836. Fifty years ago an English commissioner set boundary posts at the mouth of the Orinoco, far to the westward of the Essequibo, but these were subsequently withdrawn, and steps taken towards settling the question by treaty. The matter has been procrastinated and postponed from that time to the present, Great Britain in the meantime maintaining a firm hold on the disputed territory.

The dispute between Argentina and Brazil for the fertile territory lying between the rivers Uruguay and Yguazú, which goes by the name of Misiones, has been decided in favor of Brazil by the President of the United States, who was selected as arbiter by the two claiming Republics. This dispute had been maintained for a century and a half between Spain and Portugal, and between Argentina and Brazil as heirs of their mother countries. The territory involved covers an area of about 31,000 square miles. The early Jesuit fathers planted their missions in this interfluvial territory of great natural advantages of climate and soil whose lines had never been properly fixed, and hence became and continued to be the object of longing desire by both countries. The President has decided that the boundary line is constituted and shall be established by and upon the rivers Pepiri (also called Pepiri-guazú) and San Antonio, to wit, the rivers which Brazil has designated.

ALASKA.—It is stated that about 1,000 white people have been added to the population of Alaska since the census of 1890. Most of these are settled at Juneau and the mining camps in that vicinity. The mining industries are reported to be in a prosperous condition, and considerable capital is being invested in those lines. But the isolated condition of the region and lack of representation in Congress render it impracticable to gather much information as to the actual condition of the Territory. It has received but small attention from Congress since the passage of the act organizing a district government in 1884. Propositions looking towards represen-

tation in the national legislature, to provide a code of laws, to provide a civil government, and to provide for the formation and government of municipal corporations have engaged the attention of Congress to the extent of favorable reports from the committee having such matters in charge, but no action has yet been taken to give effect to these recommendations. The Governor of the Territory is of the opinion that the Indian population is decreasing, especially on that part of the coast where they come in contact with white people, and also on the western coast, from a want of proper food supply. The experiment of shipping domesticated reindeer from Siberia and propagating them is reported to be successful. A considerable portion of the expense of this undertaking has been defrayed by private contributions. Congress has steadily reduced appropriations for education since 1891.

There has been no legislation by Congress extending the public land laws generally over Alaska, but an act approved March 3, 1891, entitled "An Act to repeal timber-culture laws and for other purposes," makes provision, under certain conditions, for the disposal of public lands in the Territory of Alaska for town-site purposes, and for the use and necessities of trade and manufacture. An evidence of some activity in this direction is shown in the fact that eighty-six applications for surveys have been received at the General Land Office, including town sites (2), fishing stations, trading posts, canneries, saw mills, coal shipping, etc.

PACIFIC OCEAN SUB-MARINE CABLE.—An appropriation of \$500,000 towards the construction of a sub-marine cable to the Hawaiian Islands was defeated during the last hours of Congress.

The Government of Hawaii, which preceded the present Republic, made an effort to lease to Great Britain one of the uninhabited islands belonging to Hawaii as a station for a sub-marine cable, to be laid from Canada to Australia, with a connection between the island leased and Honolulu. This project would have been completed but for a clause in our reciprocity treaty with Hawaii, which provided that as long as said treaty remained in force the government of Hawaii would not "lease or otherwise dispose of or create any lien upon any port, harbor, or other territory in its dominion, or grant any special privilege or right of use therein to any other power, state, or government."

It became therefore necessary to secure the consent of Congress before the proposed lease could be effected; and the President of the United States in a message to the Senate and House of Representatives, dated January 7, 1895, recommended a modifica-



tion of the treaty so as to permit the proposed lease; remarking that he hoped Congress would see fit to grant the request, and that our consent to the proposed lease would be promptly accorded.

Congress took no action on the message.

**SAMOA.**—The Commission, composed of W. L. Chambers for the United States, B. M. Haggard for Great Britain and T. Greiner for Germany, appointed under the Treaty of Berlin to settle questions affecting the titles to lands in Samoa, has completed its work. The detailed statement of results is in Samoa. The United States Commissioner has submitted his individual report to the Secretary of State. It is stated that the general policy of the Commission was to favor the natives, although it has been reported in German newspapers that the result was to give to the Germans nearly all the lands on the islands. There were titles to land held by natives, German traders, Englishmen and Americans, that in the aggregate amounted to 200,000 acres more than the whole area of the islands.

**NOTES.**—The Bureau of American Republics is reliably informed that the Guatemalan government is taking steps to re-establish the old port of Istapa, situated about six and a half miles from San José. It is proposed to construct a harbor there capable of accommodating one hundred vessels. This action has been rendered necessary because the port of San José is no longer sufficiently large to handle the incoming and outgoing traffic of the Pacific coast of that republic. It is proposed to build a branch railway from some point on the Central Railway to connect with this new port.

The Bureau has recently issued a Hand-book of Honduras and the second volume of the Code of Commercial Nomenclature.

The several scientific societies of Washington, in conjunction with representatives from the Smithsonian Institution, the National Museum, the Geological Survey, the Army Medical Museum, have organized as a federation. The federated Society is composed of the officers and administrative boards of the several components, and has power to provide for joint meetings and to conduct courses of popular lectures, to act in the interest of the component societies at the instance of any of them, etc. The societies represented in the federation are the Anthropological, the Biological, the Chemical, the Entomological, the Geologic, the Philosophical, and the National Geographic. At the last meeting of the federation action was taken in regard to inviting the International Geographical Congress to hold its next session in Washington. The Congress has never held a session in this country.

## OBITUARIES.

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### WILLIAM REMSEN.

Mr. William Remsen, for many years the Chairman of the Council of the American Geographical Society, died in New York City, on the 3d of March, 1895, in the 81st year of his age.

He was a highly-esteemed citizen and was a direct descendant of Rem-Jansen, one of the earliest of the Dutch settlers in the vicinity of New York; the name was contracted in the early days of the country into Remsen. Mr. Remsen was a typical representative of those upright, frugal, unostentatious and intelligent Knickerbockers who by their business sagacity, their probity and consistent lives formed so valuable a part of the population of this metropolis. Mr. Remsen was born in this city in 1815. His father, Henry Remsen, was one of the presidents of the Manhattan Bank. He received a classical education and was graduated at Princeton College in 1835. He afterward studied law under Judge William Kent, son of Chancellor Kent, but never practised his profession, having inherited an estate which required his personal supervision, and which was largely augmented under his careful management. He married Jane Suydam, a representative of another old Dutch family of this city, of which marriage five children survive. Mrs. Remsen died a few years ago. Mr. Remsen was one of the founders of the Third Avenue surface railroad and one of its largest stockholders. He was for thirty-four years a trustee of the Greenwich Savings Bank, and for eighteen years its vice-president, and also for about the same period he was a trustee of the Northern Dispensary, at the junction of Waverley Place and Christopher Street. He was one of the oldest living members of the American Geographical Society, and for many years the chairman of its council. He was an old member of the Historical Society.

### SIR HENRY RAWLINSON.

Sir Henry Creswicke Rawlinson died in London on the 5th of March, 1895, at the age of eighty-five years. He was born in Oxford, and entered the East India Company's service in 1827. He devoted himself to his military duties, as well as to the study of

Oriental languages, and was one of the officers sent in 1833 by the Governor-General to re-organize the Persian army. In Persia, where he remained for six years, he travelled extensively and paid great attention to the archæological remains and especially to the Behistun inscriptions. When the Afghan difficulties began, he was sent to Kabul, and later to Kandahar, where he prepared for the coming struggle by collecting supplies and expelling the Afghan population. He successfully defended the city against the victorious enemy, and returned to India with increased reputation.

He was appointed British Resident at Bagdad, in 1843, and there continued his study of the cuneiform inscriptions, to which he found the key. The writings at Behistun are on the smooth face of the rock, at an elevation of 300 feet above the plain, and it was a task of extreme difficulty and danger to reach them, but Sir Henry succeeded in copying the entire record.

In 1856 he was appointed a Director of the East India Company, and the next year took his seat in Parliament for Reigate. He was sent as Minister to Persia in 1859, and after his return to England again entered Parliament as Member for Frome. In 1868 he was made a Life Member of the India Council. Besides his well-known work, *England and Russia in the East*, Sir Henry's literary productions were confined to the memoirs which he contributed to the learned societies of Europe.

#### ISMAÏL PASHA.

The ex-Khedive of Egypt died on the 2d of March, 1895, at his palace on the Bosphorus, where he had lived in virtual captivity for a number of years.

Ismaïl was the son of Ibrahim Pasha and was educated in Paris. He became Viceroy of Egypt in January, 1863, and for fifteen years gave a loose rein to his extravagant taste for display and self-indulgence, without wholly neglecting his duties as a ruler. He built railways, made ports at Alexandria, Port Saïd and Suez, opened the Suez Canal, and extended his dominion to the equator; but the vast wealth which came into his hands, through the rise in the price of cotton caused by the American Civil War and from the numerous Egyptian loans, was squandered for the most part in reckless prodigality.

His forced abdication on the 26th of June, 1879, closed a career in which charity itself can find but little to approve.

## BOOK NOTICES.

*Les Abîmes, les Eaux Souterraines, les Cavernes, les Sources, la Spéléologie. Explorations Souterraines effectuées de 1888 à 1893 en France, Belgique, Autriche et Grèce, avec le concours de M.M. G. Gaupillat, N.-A. Sidéridès, W. Putick, E. Rupin, Ph. Lalande, R. Pons, L. De Launay, F. Mazauric, P. Arnal, J. Bourguet, etc. 4 Phototypies et 16 plans hors texte. 100 Gravures d'après des Photographies, et des Dessins de G. Vuillier, L. de Launay, et E. Rupin (9 hors texte) et 200 Cartes, Plans et Coupes. Par E.-A. Martel. 4to, pp. viii-580. Librairie Ch. Delagrave, Paris, 1894.*

In the preface to this superb volume M. Martel recalls the impression produced upon him in early youth by the sight of the grotto of Gargas and the subterranean torrent of Eaux-Chaudes, in the Pyrenees. Thirteen years later, when visiting the cave of Adelsberg, in Carniola, he could not but envy those who first entered those vast and dazzling vaulted chambers.

In 1883-1885 he explored in every direction the country of the *Causses*, with its cañons and underground rivers,\* and he has since extended his travels into Belgium, the Karst, and the Peloponnesus. Beginning as a tourist in search of the picturesque, M. Martel was soon led to see the opportunity offered by these journeys for the solution of many obscure problems. He visited in France alone, from 1888 to 1893, 230 abysses, sources and grottoes, small and large, and made subterranean plans, amounting in all to a length of 50 kilometres (31 miles), three-fourths of it in localities previously unknown.

For the science, to which he has devoted himself, M. Martel adopts the name of *speleology*, first proposed by M. Emile Rivière. This new branch of science presents a number of subdivisions, hydrological, geological, topographical, agricultural, hygienic and meteorological, while the flora and the fauna and the pre-historic remains of these cavities are eminently worthy of special and systematic study. In some of these subdivisions there has been considerable activity in Austria during the past twelve years, and M. Martel looks for results even greater than those already obtained, when explorers shall have adopted the two inappreciable

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\* Fully described in his book, *Les Cévennes et la Région des Causses*, published in 1890.

instruments, which have done him such service: the telephone and the folding canvas boat.

The boat recommended by M. Martel is that made by Osgood, of Battle Creek, Michigan. This weighs, according to size, from 20 to 40 kilogrammes (45-90 lbs.), and carries from one to four persons. The size, No. 2, can be transported in four pieces, weighing each from 15 to 20 lbs. The only defect of the Osgood is its slowness, which makes it liable to damage; but it has very great elasticity.

There is danger in the exploration of the caverns. Sometimes the agitation of the air caused by a slight noise loosens a stalagmite, supported on a narrow base, and brings it rolling down a slope; or a mass of carbonate of lime, apparently solid, gives way under the hand or the foot, on the edge of an opening. When afloat on the underground stream, it is necessary to be alive to every sound that may indicate a cascade near at hand, and to take the alarm if the candles begin to burn dimly, a sure sign of the presence of carbonic acid. M. Martel met with this poisonous gas only four times in France, but it is always to be feared, and the candle, which detects it, is to be preferred to the electric light.

Another danger is that of venturing too far in the boat under the low roof of the cavern, and finding the return cut off by the rise of the stream from the effect of heavy rains.

With prudence and experience these and the many other perils of navigation and discovery below the surface of the earth may be avoided or overcome, and the rewards of adventure in this field, as set forth in this book, offer a positively new sensation.

M. Martel has not contented himself with showing what has been done to reveal the wonders of the under-world; he has succeeded in forming the first Spelæological Society. Mr. Mark Sturup writes as follows to *Nature*, of March 14:

The formation of the Society, M. Martel writes me, is now an accomplished fact. About 130 gentlemen of all nationalities, some of whom bear well-known names in the ranks of science, have signified their adhesion. A provisional code of rules has been printed and adopted, and a meeting has already taken place, under the presidency of the president-elect, M. F. Deloncle, Deputy for the Basses-Alpes.

The first article of the rules states the object of the Society as follows: "The Society of Spelæology is instituted in order to insure the exploration—to facilitate the general study—to co-operate in the regulation or utilisation—of subterranean cavities of all sorts, known or unknown, whether natural or artificial; to encourage and aid with funds investigations relating thereto; in a word to popularise and develop in a way, at once practical and theoretical, utilitarian and scientific, researches of all kinds in the interior of the earth." The subscription for ordinary members is fifteen francs per annum. It is intended to publish a quarterly bulletin; to a copy of which each member will be entitled.

Mr. Stirrup adds that M. Martel, the Secretary, may be addressed at 8 rue Ménars, Paris.

*The Voyages of the Cabots in 1497 and 1498. With an attempt to determine their landfall and to identify their island of St. John. By Samuel Edward Dawson, Lit.D. From the Transactions of the Royal Society of Canada, Vol. XII, Section II, 1894, pp. 51-112.*

Dr. Dawson has written an admirable paper. At the outset, he accepts without discussion the following propositions:

That John Cabot was a Venetian, who settled in England with all his family;

That Sebastian, his second son, was born in Venice;

That letters patent of Henry VII were issued March 5, 1496, to the father and his three sons, empowering them, at their own expense, to discover and take possession of new lands for England;

That John Cabot, accompanied perhaps by Sebastian, sailed from Bristol in May, 1497, discovered and landed upon some part of America, between Cape Cod, in Massachusetts, and Cape Chidley, in Labrador, and returned to Bristol in July of the same year;

That in consideration of this discovery King Henry VII granted solely to John Cabot new letters patent, dated February 3, 1498, authorizing a second expedition on a more extended scale. That this expedition consisted of several ships and about 300 men; that it sailed in the spring of 1498, and that John and Sebastian Cabot went with it. It returned, but no one knows when, and with it John Cabot disappears from history.

The two voyages are to be distinguished. The former, accomplished by John Cabot, in the little ship *Matthew*, with a crew of 18 men, lasted over three months, for which period only it was provisioned, and its course was south of Ireland, then for a while north and lastly west, with the pole star on the right hand. On this first voyage no ice was reported and no man was seen.

The second voyage was in every respect unlike the first, and the question of the first landfall has been complicated by confounding the incidents and events of the two expeditions.

From his critical examination of the authorities, corrected by his personal acquaintance with the coasts and the waters, Dr. Dawson draws these conclusions:

1. That the island called St. John on the map of 1544 is not that now known as Prince Edward Island, but is the great Magdalen Island, which lies in the course of vessels passing through the strait between Cape Breton and Newfoundland.



2. That the island of St. John of Cabot is Scatari Island, marking the landfall at Cape Breton, the easternmost point of the island called after it, and that that cape is the natural landfall of a vessel missing Cape Race and pursuing a westerly course.

It follows, in his opinion, that John Cabot planted the banner of St. George on the American continent on the 24th of June, 1497, more than a year before Columbus set foot on the mainland. To speak with exactness, however, the priority can hardly belong to Cabot, since Cape Breton is, after all, an island.

It is less easy to settle the claims of Sebastian Cabot. Mr. Henry Stevens's formula—Sebastian Cabot — John Cabot=zero—has the sting and the honey and the girth of the epigram, but it is not to be taken seriously. Sebastian was a self-seeker, dishonest and false-hearted, according to some writers; but Dr. Dawson judges him with charity. He says that Cabot's reputation has been entirely at the mercy of his friends and that it is impossible to say whether he was addicted to inaccuracy of expression, or his friends were endowed with treacherous memories. His ability and nautical knowledge are hardly to be questioned. For years he held the office of Grand Pilot of Spain and, as Dr. Dawson says, Ferdinand and Charles V, who were good judges of men, trusted him to the last.

Dr. Dawson finds some firm ground in the conflicting testimony with regard to the second expedition, which returned under command of Sebastian. These points are established: That the expedition was a large and important one; that it sailed to the north, and that the landfall was far in the north in a region of ice and continual daylight; that from the extreme north it coasted south to latitude  $38^{\circ}$  in search of an open ocean to Cathay; that having been provisioned for a year, the expedition was fitted for such an exploration, and had the time to perform it.

If, as seems probable, the landfall in this case was on the coast of Labrador, the honour of discovering the mainland of North America belongs to the second expedition, rather than to the first; but nothing can be affirmed on this point, and the distinction, such as it is, of the first landing on the continent seems to belong of right to Columbus.

*The First Landfall of Columbus, by Jacques W. Redway, F.R.G.S.  
Reprint from National Geographic Magazine, 1894, pp. 179-192.*

In this paper Mr. Redway makes a well-sustained effort to identify the island of Samaná with the Admiral's Guanahani. He finds by a study of the earlier maps that Guanahani, El Terrigo, Trianga, Atwood Cay, Isle Nova and Samaná are one and the same, and that

one is the Guanahani of Columbus. He admits at the same time that, in the maps of the sixteenth century,

the transference and reduplication of names was made in a wholesale manner, and he claims only to have furnished additional evidence in favour of Samaná.

It may well be doubted whether Guanahani can ever be identified in such a manner as to make an end of controversy on the subject; but meanwhile the style and manner of Mr. Redway's argument are to be commended.

Four reproductions of charts elucidate the text.

*À Travers l'Afrique Australe, par Jules Leclercq, Membre Collaborateur de la Société Impériale Russe de Géographie, etc. Ouvrage accompagné de gravures et d'une Carte. Pp. 313, 18mo. (Librairie Plon.) Paris, 1895.*

M. Leclercq is an unwearied traveller, and he tells his experiences, whether of Colorado, or Samarcand, or South Africa, in the same agreeable style.

He arrived at Cape Town in June, in the rainy season, which is the South African form of winter. The city seemed to him altogether ugly and unworthy of its situation, but he was greatly impressed by the Municipal Gardens, the Library and the Museum.

He devotes a chapter to the government of the colony, and another to Sir Henry Loch and Mr. Cecil Rhodes, whom he admires. From Cape Town he crossed the Karroo to Kimberley and the diamond mines. Here he was able to study the life of the workmen. One company employed 8,000 men: 1,400 whites, 6,000 blacks, and several hundred convicts, of various races. In one compound M. Leclercq saw 2,000 Caffres, who were locked up every night, when their twelve working hours were past, to be marched out in files in the morning. They are regularly searched after the day's labour; yet they manage to secrete a certain proportion of the stones. These men are paid for their work, and this is the one distinction between their lot and that of the slaves in the Brazilian mines.

M. Leclercq visited also the Orange Free State, the Transvaal, Zululand and Natal. He foresees that the English capital will ultimately carry the day against the independent spirit of the Boers, in spite of their victories in the field; and in describing these he makes a criticism of Mr. Gladstone, which will hardly take its place in history.

He was delighted with Natal, the paradise of Africa, where the Hindus are establishing themselves, and in Zululand he could not

sufficiently admire the native race. He expresses the opinion that the future of all South Africa belongs to the natives, Caffres or Zulus:

.... Ai posteri  
L'ardua sentenza ....

*Diary of a Journey through Mongolia and Tibet in 1891 and 1892. By William Woodville Rockhill, Gold Medalist of the Royal Geographical Society. Published by the Smithsonian Institution. 8vo, pp. xx-413. Washington, 1894.*

Mr. Rockhill's journey was undertaken partly under the auspices of the Smithsonian Institution. In an Introductory Notice the author briefly describes the previous journeys in Tibet from the time of Friar Odoric, in 1325, down to the year 1891. Some of the most valuable work has been done by the native explorers trained for scientific geographical work, and sent into the countries beyond the Himalaya by the Great Trigonometrical Survey of India. They have traversed the whole of Tibet from south to north and from west to east, and have surveyed the important towns and the country of Central and Western Tibet. One of them, known as A—K—, has made a map of the city of Lh'asa on a scale of four inches to the mile. Excellent as surveyors, these explorers are not well-trained observers, and details of value escape their attention.

It was after his journey in 1888-1889 that Mr. Rockhill determined to visit Mongolia and Tibet once again and, if possible, to reach Nepal or Sikkim by crossing Tibet from north-east to south-west. He endeavoured to steer clear of Lh'asa, but was diverted from his intended path, when at very nearly the same spot at which Bonvalot and Bower had been stopped, and was forced by the Tibetans to turn his face eastward. The remainder of his journey was through a not unknown country, but he believes that he has been able to collect information which will be of value to future explorers.

The sketch route-map accompanying the volume is from an original on a scale of four statute miles to the inch.

Wherever Mr. Rockhill has been able to check his observations by those of others—the Jesuits in the 17th Century, Prjevalsky and Bower—he has found a fair agreement in the results, though he regards his own work as nothing more than a rough preliminary sketch of a nearly unknown region. During the whole length of his journey of 3,400 miles, Mr. Rockhill took observations for time and latitude, and for altitude, by the boiling point of water

and from aneroid readings, besides meteorological observations, taken three times daily, for temperature, pressure, cloudiness, wind, etc.

The diary form of the narrative, adopted by the author after much hesitation, vindicates his choice by conveying in a lively way the impression of the moment, and enabling the reader to estimate the hardships of fatigue and dirt and bad smells, through which the traveller forced his way for months. The party were nearly starved when, early in July, 1892, they reached the neighbourhood of the Tengri Nor and were refused permission to go any farther. Some days were spent in parleying, and meanwhile all good things to eat were pressed upon them. The return was through China to Shanghai.

Mr. Rockhill's knowledge of the Chinese and Tibetan languages gives a special value to his notes and comments.

Besides the map, the volume has numerous illustrations from drawings and photographs.

*Corea or Cho-sen, The Land of the Morning Calm. By A. Henry Savage-Landor. With numerous Text and Full-Page Illustrations from Drawings made by the Author. 8vo, pp. xiii-304. (Macmillan & Co.) New York, 1895.*

Mr. Savage-Landor spent several months in Corea, or rather in the capital, Seoul, and embraced every opportunity of studying the natives, their manners and customs, as they appeared to a foreigner, unacquainted with the language or the history of the country.

His story is straightforward, and his descriptions impress the reader by their evident truthfulness. There is something too much of the difficulties the author encountered in the way of his morning dip, and his puns could be spared, but he keeps a hold on his subject to the end.

These pen and pencil sketches from the daily life of a strange and a decaying people have the value of what are called human documents, for all students of the Hermit Nation, and of Eastern Asia.

*The Eastern Bimetallic League (established 1894). 'The appreciation of Gold; Notes illustrative of the disastrous effect upon foreign commercial interests in the Far East, and upon the Industries and Wage-earners of the West, by H. Kopsch, F.R.G.S., Member of the Eastern Bimetallic League. 12mo, pp. vi-18. Shanghai, 1894.*

This pamphlet of 18 pages is a sermon on the following text:

"As the children of the house of Israel do worship gold, even so shall gold be their damnation."

Mr. Kopsch brings together a number of facts to show that the competition of Asia threatens to make the lot of the Western labourers harder than that of the slaves in former days, and that unless silver is remonetised, protective measures will have to be adopted to exclude Oriental manufactures from the gold-using countries. The prospect is gloomy, but there seems to be a difference of opinion on the subject, even in Shanghai.

*Definitions of Geographical Names, with Instructions for their correct pronunciation. For teachers and pupils of the various grades of schools of the United States. A supplement to every School Geography. By Dr. Konrad Ganzenmüller. 8vo, 32 pp. Kurt Moebius, New York, 1894.*

Dr. Ganzenmüller's pamphlet answers a number of the questions for which the scholar consults the *Nomina Geographica*.

It is, perhaps, a mistake to suppose that pupils will take an abiding interest in the meaning of names of places; but it is a service done to show that the names have a meaning, which may be arrived at with a little effort.

*Primary Geography. By Alex. Everett Frye. 4to, pp. viii-137. Ginn & Co., Boston, 1894.*

Mr. Frye has no misgivings about the character of his work. He says, in his preface:

"The subject is treated topically. The day of patchwork teaching has passed. Teachers have long been asking for a text-book based on the topical study of the earth. This book holds the earth as a unit before the mind, and relates all study to that unit. The memory is thus aided and much time is saved.

The text on PEOPLE centers in child-life. The word race has a deeper meaning than is taught by the size of cheek bones or the texture of hair. This book leads pupils into the homes of the races. Read to a child one of the stories on pages 55 to 72, and note the result."

The taste displayed in these paragraphs is not to be commended. Acquisition of facts is not the one good thing for children, and a tone of aggressive self-confidence in a teacher sets a bad example.

The book is a good one. It is well arranged, and the information is given in a direct and interesting way. The map is used from the beginning, and the questions asked rise naturally out of the text, while the illustrations, which are numerous, are for the most part accurate and helpful.

## MAP NOTICES.

*Rain and Snow of the United States, compiled to the end of 1891, with seasonal, monthly and other charts. By Mark W. Harrington, chief of the Weather Bureau, Washington, 1894.*

The U. S Weather Bureau published, last October, as Bulletin C, an atlas containing maps showing the mean precipitation for each month, each season and for the year, and following it, a bulletin containing the data upon which the maps are based. In this is given the precipitation in each year of record at 1,073 stations, being by far the most complete compilation of the kind ever made in this country. It contains, also, the mean monthly rainfall at 103 stations, besides much other valuable data.

The execution of the maps is not in keeping with the value of the data which they present.

In preparing a precipitation map, as in preparing any other map, one has measurements at certain points, which serve as guides in sketching lines. In this case the data consist of rainfall measurements at a few hundred points scattered over the country. At these points, each the size of a rain gauge, we may say we have data, though it is, at best, rather uncertain data.

The rainfall at any station ranges widely from year to year, so much so that an average of less than ten years is likely to be misleading. The rainfall is so greatly affected by local topography, and even by the situation of the gauge, that the result from a single station may differ widely from those of neighbouring stations. On these accounts, it is advisable, wherever possible, to use the mean rainfall of several years at each station, and to use the mean of several neighbouring stations, instead of using the data from stations individually.

The rainfall over the areas between these points of observation is related to that at these observed points, in accordance with known laws, dependent upon the relief of the country, the source of the moisture and the direction of winds. A knowledge of the laws of rainfall, the relief of the country and its influence upon rainfall, are therefore absolutely necessary in preparing rainfall maps.

In the maps before us it would seem that sufficient consideration has not been given to these important points. Although, on the score above suggested, these maps are not all that could be



desired, they give a much better idea of the distribution of rainfall than any heretofore published. The gradual diminution of the annual rainfall inland from the Atlantic and northward from the Gulf, the two main sources of moisture; its diminution westward, on the slope of the Great Plains; and eastward from the Pacific Coast, are clearly shown.

The maps showing monthly and seasonal rainfall develop the peculiarities of distribution through the year of the rainfall of the plains and Rocky Mountain region. They show the heavy rainfall on the Pacific coast in winter, by which the moist air currents from the Pacific are drained, leaving them to flow over the Rocky Mountains as dry winds; while in Summer these same moist air currents disgorge but little moisture on the hot Pacific coast, and, passing over into the Rocky Mountain region as moist winds, give that country a rainy season in summer.

*Epoch Maps, Illustrating American History, by Albert Bushnell Hart. Longmans, Green & Co., New York, 1893.*

This little atlas comprises a series of fourteen maps of the United States and North America, illustrating principally the changes of territory in colonial and later times.

It contains a map of the physical features of the United States; a map of North America, showing territorial claims in 1650; of eastern North America, showing the English colonies in 1700; of North America, showing territorial claims in 1750; the English colonies between 1763 and 1775; the United States in 1783, at the close of the Revolution; the accessions of territory to the United States; the status of slavery in the United States in 1801 and 1825; sketches showing the principal territorial controversies between the United States and other Powers; the United States in 1855, 1861 and 1891.

This is a very interesting series of maps, but they give one the impression of being merely samples, since there is a great deal of territorial history to be filled in between the dates which these maps represent. For instance, in the formation of States and Territories there are many events which are not represented here; indeed, those omitted are many times those represented. A full series of such maps illustrating the changes in State and Territorial boundaries is a thing to be desired.

In looking them over we find several minor errors which should be corrected in a future edition. For instance, in map No. 7, Territorial Growth, the southern boundary of the original territory of the United States should be placed throughout on the 31st

parallel, as established by the provisional treaty of peace. The Louisiana Purchase should be limited by the boundaries of Texas, the 100th meridian and the Arkansas River, as established by the treaty of 1819 with Spain. At the time of its acquisition it had no well-defined limits. Texas never extended up into Wyoming, but it did extend to the Arkansas River on the north and to the Rio Grande on the west. If there were ever any question about this it is settled by the fact that the United States paid Texas \$10,000,000 for the areas ceded, which are now in New Mexico, Colorado, Kansas and Oklahoma. The area south of the 31st parallel, between the Perdido River and Lake Pontchartrain, was long in dispute between the United States and Spain, and in 1812, seven years before the purchase of the Floridas, the United States divided this area among Louisiana, Mississippi and Alabama, but its act in thus disposing of the territory in dispute did not give us jurisdiction over it, since Spain, the owner of the Floridas, was not a party to it.

Oregon is said to have been acquired in 1805 by the Lewis and Clarke expedition. We were not aware that these explorations made acquisitions of territory. The acquisition of Oregon was a gradual process brought about by discovery and settlement, and was not completed until the Webster-Ashburton treaty in 1847.

The last map, showing the status of the States and Territories in 1891, distinguishes the thirteen original States, including Maine, presumably as being a part of Massachusetts. If this be so, there is no good reason for not including Vermont as a part of New York; Kentucky, and, indeed, the whole Northwestern Territory, as a part of Virginia; Tennessee as a part of North Carolina, and Alabama and Mississippi as a part of Georgia.

Referring again to the earlier maps of this little work, it should be said that it is difficult in the extreme to delimit upon maps boundaries which are loosely and vaguely stated in unsettled and unexplored regions, and the author has perhaps done as well as it is possible to do.

*Kultur-Karte der V. S. von Amerika, masstab 1:10,000,000, Verlag von R. Oldenbourg in München.*

This map makes an attempt to show, on one sheet, a variety of physical and statistical data, including the magnitude of cities, the distribution of the coloured race and the Indians, the iron and coal fields, the wheat, corn and cotton regions, the Great Plains and the arid region, and our railroad system. The mixture thus produced is not very successful, owing to its complexity. The regions are in

many cases in nature superimposed one over another, but on the map the right of way is, in some cases, given to one product, at the expense of others. Thus, while cotton and the negro are practically coextensive, the latter's range is greatly restricted on the map in order to show that of the former. Indeed, cotton seems to be the favourite, for its range is made to include much of southern California and central New Mexico. Wheat is similarly forced to give way to corn, and corn to cotton.

*Rand, McNally & Co.'s Physical Geography of North America.*

This is a wall map, on a scale of about 90 miles to 1 inch, showing by tints the elevation in the following grades:

Below sea level, sea level to 1,000 feet, 1,000 feet to 3,250 feet, 3,250 feet to 6,500 feet, above 6,500 feet.

Isothermal lines are added for certain degrees Fahrenheit for January and July, and the northern limits of certain forms of vegetation are indicated.

It is a very useful map for school and lecture purposes.

*Mortalità per Infezione Malarica in ciascun Comune del Regno d'Italia nei Tre Anni 1890-91-92. Scala 1:1,000,000. Direzione Generale della statistica del Regno, 1894.*

This map, compiled by Signor L. Bodio, Director-General of Statistics, shows the death rate per 1,000 inhabitants from malarial disease, in ten grades of colour. It shows that in North Italy, including the northern half of the Peninsula, deaths from this disease are comparatively rare, but that southward over the Peninsula, in Sicily and especially in the Island of Sardinia, it is much more prevalent and fatal, particularly in scattered localities.

*Geological Map of Alabama with Explanatory Chart, Geological Survey of Alabama. Montgomery, 1894.*

The Geological Survey of Alabama has been in existence for twenty-one years, and the publication of this map of the State appropriately marks the attaining of its majority. The energies of the Survey have been very properly directed largely to the solution of economic problems connected with the enormous mineral resources of the State, but this publication affords ample evidence that the purely scientific problems have not been neglected.

The scale of the map is ten miles to the inch, making a sheet 22 by 36 inches within the mat lines. The base, compiled from the Land Office records and atlas sheets of the U. S. Geological Survey, is by far the best map of the State in existence for general

purposes. The land lines, while detracting from its appearance, doubtless add largely to its value for many local uses.

The geological formations are represented by a combination of colours and patterns, eighteen distinctions being obtained in the post-Paleozoic and thirteen in the Paleozoic and older formations. The colours are skillfully selected so as to produce a pleasing effect and at the same time render the map easily read. The larger geological divisions of the State are clearly brought out by the grouping of the colours so that it serves well as a wall map. A careful examination shows that the geological subdivision has been carried fully up to the scale of the map, and in some cases beyond the scale. This is not noticeable in the flat Mesozoic and later formations, but in areas of Paleozoic rocks, particularly where they are steeply inclined, the outlines of the formations are considerably distorted by the exaggeration in width of the outcrops. If the faults of the valley region had been distinguished from the normal formation boundaries by some characteristic line, such as a series of dashes, the reading of the complicated structure would have been greatly facilitated. Of course the position of the faults can be determined in most cases by an examination of the relations of surface outcrops, but there is nothing on the map itself to indicate that some at least of the abnormal contacts may not be deposition unconformities. Considering the scale of the map and the absence of anything to distinguish faults, the highly complicated geology of some portions of the State, particularly of the Coosa valley, is very clearly represented. It is probable that the determinations of the age of some formations in this region are in error. Thus the small areas of sandstone in the vicinity of Rock Run classed as Silurian are without much question Devonian. These areas are small and of comparatively little importance except that they suggest the presence of a shore line in this region in early Devonian time.

The chart accompanying the map gives an excellent résumé of much scientific as well as economic information concerning the State.

Taken altogether this map of Alabama, in pleasing appearance and accuracy of delineation, probably surpasses any other State geological map thus far published, possibly excepting that of Maryland. It is to be hoped that so admirable an example may be followed by other States.

C. W. H.

*Geological Survey of New Jersey. Report on Surface Geology for 1894, by Rollin W. Salisbury. From the Annual Report of the State Geologist. Trenton, N. J., 1895.*

The three maps which accompany this report possess much interest for students of Pleistocene geology. They cover ground in some measure familiar to many glacialists, and the careful study and accurate delineation of the facts will make this a type region with which others less accessible may readily be compared.

The first of the three maps, prepared with the assistance of Messrs. Kümmell and Whitson, is particularly interesting to all who have followed the discussion concerning the recent formations of northern New Jersey. It is upon the diverse interpretation of these formations and similar ones in other regions that the opposing theories of one or several ice-invasions rest, and their importance has led to extremely detailed examination in the field. Prof. Salisbury represents eight phases of the glacial drift, of which six are extramorainic. Three of the latter are attributed to the last ice-invasion which formed the terminal moraine, and three either wholly or in part to a very much earlier glacial age. The map shows clearly the relations of these different phases of the drift to each other and to the moraine, and if the author's interpretation does not everywhere find acceptance, all will be indebted to him for the admirable manner in which the facts are exhibited.

The second map, prepared by Messrs. Salisbury and Peet, is on a large scale, showing the direction of glacial striæ on the Palisade Ridge opposite New York City. While the facts represented are not of so wide significance, this also is an important contribution to exact glaciology.

The third map, prepared jointly by Messrs. Salisbury and Kümmel, is a large-scale sheet covering the region west of Paterson and Newark, and showing the extinct Lake Passaic. This lake was formed at first by the ice front when it occupied the position marked by the terminal moraine and later by an ice dam at Paterson, the pre-glacial channel of the Passaic through the trap ridges at Milburn having been choked up by the moraine. At the time of its greatest extent the lake had a length of thirty miles and a width of ten. The old shore lines have been traced with evident care and numerous elevations of the various shore features are given. It is somewhat difficult to make out the deformation of the shore lines from these figures, and the isobases showing this deformation on a small diagram in the text might have been printed on the large-scale map with advantage.

C. W. H.

*Grundzüge der Physikalischen Geographie von Guatemala. Von Dr. Carl Sapper. Mit 4 Karten. (Ergänzungsheft No 113 zu "Petermanns Mitteilungen.") Gotha: Justus Perthes, 1894.*

This small work is the most succinct and valuable contribution to the physical geography that has as yet been published concerning any of the Spanish-American countries, and will prove an invaluable work of reference to workers in all lines of physical geography and geology. It represents the scientific results of a long residence by its author in the Republic of Guatemala. Three large coloured maps are appended which, although printed in somewhat incongruous tints, give a clear view of the hypsometric, geological and botanical features of the Republic. The work gives condensed chapters on the geology, orography, hydrography, climatology and plant geography, besides appendices giving a table of altitudes of over 800 points in the Republic, or an average of over seven to the square mile, concluding with a valuable bibliography of previous publications. The value of the geological observations accompanied by a map will be better appreciated when we learn that Dr. Sapper has called to his aid such valuable authorities as Drs. K. A. von Zittel, A. Rothpletz, C. Schwager, E. Nauman, Stoll and Roemer.

To the reader who wishes to obtain a succinct idea of the many grand geological phenomena concentrated in this little country, this will be an invaluable work of reference. The numerous volcanoes, the vast series of both sedimentary and eruptive rocks, including those from Azoic to Pleistocene age, are described in an intelligible manner. It is interesting to note the apparently authentic report upon the occurrence of the older Azoic and Paleozoic rocks in this region which are not well developed elsewhere between the southern line of the United States and the northernmost Republic of South America.

These contributions throw valuable light also upon the relations of the Antillean structure. Furthermore, in the chapter on orography the relations of the various uplifts and geologic evolution of the country are described. The hydrography of the streams flowing into the Bay of Honduras, the Pacific and the inland lakes is set forth with much detail. The chapter on climatology and the geography of the plants is especially thorough, showing a keen appreciation for the collection of just such data as will be of value to all interested in the geographical distribution of plants and animals. A valuable little table shows the range of altitude in which the plants are successfully cultivated, including coffee, cocoa, bananas, sugar, tobacco, rice, corn, and thirty other products.



The distribution and character of the rainfall are given, accompanied by six valuable climatological tables of different localities, giving the humidity, temperature and rainfall.

Could we possess such compact and valuable monographs of other Spanish-American countries and the Antilles, they would greatly aid the solution of many problems of physical geography for which the investigator vainly seeks the literature of those regions.

*Map of North Eastern China, by Ch. Waeber, 1893. L. Friederichsen & Co., Hamburg. Relief by crayon shading.*

Mercator's projection, scale of midlatitude,  $18\frac{5}{16}$  miles to one inch. This map, in four sheets, represents the country between latitudes  $30^{\circ}$  and  $43^{\circ}$  north and longitudes  $112^{\circ}$  and  $125^{\circ}$  east. It is of special interest at present, as it represents the seat of war in China.

(*Annales de Géographie, No. 14, 15 octobre, 1894.*) *Carte de l'Indo-Chine, dressée sous les auspices des Ministres des Affaires Etrangères et des Colonies, par M.M. les Capitaines Cupet, Friquignon, et de Malglaive, Membres de la Mission Pavie. Echelle de 1: 2,000,000. 1895.*

This map shows, in great detail for the scale, the portion of southeastern Asia between latitudes  $8^{\circ}$  and  $24^{\circ}$  north, and longitudes  $95^{\circ}$  and  $107^{\circ}$  east. Relief is expressed by crayon shading.

*Map of part of British and German East Africa, including the British Protectorate of Uganda. Compiled in the Intelligence Division, War Office, under the direction of Lt.-Col. J. K. Trotter, 1894. Scale 25 miles to one inch. Relief by crayon shading.*

This map represents that part of East Africa, east of Lakes Tanganika and Albert Edward, between latitudes  $7^{\circ}$  south and  $2^{\circ}$  north. Nothing, perhaps, more strongly characterises the rapidity of exploration in this part of the earth than a comparison of this map with those representing the same region a decade ago.

*Carta geográfica del Ecuador, por Dr. Teodoro Wolf; publicada por orden del supremo Gobierno de la República, y trabajada bajo las presidencias de los E. E., señores Dr. D. J. M. Plácido Caamaño y Dr. D. Antonio Flores, 1892.*

This map, published by Wagner and Debes, Leipzig, is in part a compilation from various sources, ancient and modern, supplemented by the original work of Dr. Wolf. It appears under the auspices of the Ecuadorian government.

The portion of Ecuador west of the main (Eastern) chain of the Andes is represented upon six sheets, on a scale of 1:445,000

(about 7 miles to an inch), the relief being expressed in hachures. The portion east of the Andes, occupying part of a single sheet, is represented on a scale of 1:3,000,000 (48 miles to an inch), while the Galápagos Islands are represented on a third scale, that of 1:890,000 (about 14 miles to an inch.)

The map is accompanied by tables giving heights of notable mountains, cities, etc., and a list of the provinces and cantons.

*Mapa de la Provincia de Catamarca construido segun datos recogidos y observaciones personales hechas en los años 1887-93 por Gunardo Lange, Ingeniero, Director de la sección Topográfica del Museo, y dibujado por Enrique Delachaux, Cartógrafo, director de la sección Cartográfica del Mismo Establecimiento. 1893. Escala de 1:500,000. Museo de La Plata.*

This map, printed in four sheets, forms a part of the Geographical Atlas of Argentina. It has been compiled from authentic data, and from personal observations by Gunardo Lange, Director of the Topographical Section of the Museum. Relief is represented by hachures.

This is a distinct addition to our knowledge of a little known region.

*Atlas des Côtes du Congo Français, en vingt deux feuilles, à l'échelle, 1:80,000, Paris, 1893. Publié par le Sous-Secrétariat d'État des Colonies, Service Géographique. Photolithographed.*

This map was made from a reconnaissance survey following the coast by Henri Pobequin, chief of station, in 1890 and 1891, using astronomical observations of J. Hansen. It shows little beyond the coast line and the settlements, native and French, upon the coast. Relief is shown crudely by contours at intervals of about 11 metres.

*Atlas Général Vidal-Lablache Maître de Conférences de Géographie à l'école normale supérieure. 137 Cartes, 248 Cartons. Index Alphabétique de plus de 40,000 noms. Armand Colin & Cie, Paris, 1894.*

This atlas comprises two parts, historical and geographic. In the first part are 52 plates, illustrating the political geography of past times, each plate being accompanied by explanatory notes. The history of the United States for the past two centuries is shown very inadequately on a single plate, while to Europe are devoted 44 plates, and to France alone 12 plates.

The Geographic part is an admirable collection of maps showing relief, climate, vegetation, geology, agricultural products,

industries, transportation and political organization. An American might criticise the treatment of the United States in this part also, since only 5 plates out of 79 are devoted to it, while to Africa are assigned 7. The industrial and agricultural maps of this country (which are very small) are open to much criticism. The maps are finely engraved and well printed on heavy paper.

*E. Debes, Neuer Handatlas, über alle Theile der Erde, in 59 Haupt- und weit über 100 Nebenkarten, mit alphabetischen Namenverzeichnissen. Leipzig, H. Wagner und E. Debes.*

Parts 13, 14 and 15 of Debes' New Hand Atlas of all parts of the Earth have been received. Part 13 contains maps of Western Asia, Australia, and North America, and part 14 a political map of Europe, maps of South America and the Balkan Peninsula. Part 15 contains world maps showing relief and plant distribution, a map of Spain and Portugal, and one of Africa. These are accompanied by full indices. The execution is excellent.

*United States Government Maps.*

The U. S. Geological Survey has, during the year, issued 62 additional sheets of its great atlas of the United States, increasing the total number thus far published to 752. Of those issued during the past year, 46 are upon the scale of 1:62,500, or about one mile to an inch, and 16 are upon the scale of 1:125,000, or about two miles to an inch. Like the other sheets of this atlas, the relief upon these maps is shown by means of contour lines at intervals ranging from 5 to 100 feet.

Since these sheets constitute the first representation in detail of the country which they cover, they merit a somewhat extended mention. In Maine three sheets have been published. One, called the Bath sheet, shows a part of the intricate fiord-like coast of that State. The others, Norridgewock and Gray, are inland and are characterized by the forms of glacial erosion and deposition, which they represent. The North Conway sheet in New Hampshire shows part of the White Mountains, and the Londonderry sheet of Vermont a portion of the Green Mountains.

Eleven sheets lie in New York. Two, Elizabethtown and Mt. Marcy, are in the Adirondack region, the latter comprising some of the heaviest mountains in that region. Two sheets, the Kaaterskill and Durham, are in the Catskills. Others are in the Hudson and Mohawk valleys. The regions about Niagara Falls and Buffalo are represented upon sheets bearing those names.

From Pennsylvania there are five sheets, all in or near the

anthracite region, and they are characterized by the long sharp ridges and narrow valleys of the Appalachian region. Three sheets from Virginia, known as Richmond, Bermuda Hundred and Petersburg, show a region of great interest to the historians of the late civil war. From southern Louisiana come four sheets, all in the delta of the Mississippi, showing the low-lying river ridges upon which the streams flow and the intervening swamps. From Wisconsin there is one sheet, upon which is represented the irregular debris, deposited by the great northern glacier. In the James River valley of the Dakotas are five sheets, showing broad stretches of nearly level land, where the only variations of surface have been produced by depositions from this glacier. In Nebraska and Kansas are ten sheets, representing typical forms of the plains. Two represent a part of the Black Hills of South Dakota. Three sheets represent part of the semi-desert of western Texas.

Three sheets are in southern Montana, embracing the country in the neighbourhood of the Yellowstone River. Two sheets are in Colorado, one upon the plains, and the other, sharply contrasted with it, represents the great mountain mass of Pike's Peak. In central Idaho are five sheets, showing a part of that terra incognita, commonly known as the Salmon River Mountains. There is one sheet in the Sierra Nevada of California, and the list closes with a sheet representing the country about Seattle, Washington.

These sheets are  $17\frac{1}{2}$  inches in height by 13 to 15 in breadth, and represent areas, upon the smaller scale, of 900 to 1,000 square miles each, and upon the larger scale, of 225 to 250 square miles each.

The U. S. Coast and Geodetic Survey has published during the year 49 charts, among them being, however, several re-engravings of work published previously on different scales. We note, however, new charts upon the eastern coast of Maine and upon the Alaskan coast. A new edition of the map of Alaska, containing the results of the latest explorations, is one of the above number.

Among them also is the map of the District of Columbia, scale 1:9,600, in five-foot contours, published in five sheets. This map, a part of which was published by photo-lithography some years ago upon a scale of 1:4,800, is the result of the joint survey executed by the U. S. Coast and Geodetic Survey and the authorities of the District of Columbia. It is very detailed, showing houses, gutters on the sides of the streets, and other minute differences of elevation. Owing to the rapid growth of the city since the surveys were made, the changes consequent upon building operations, the laying out of

new streets, cuttings and fillings, etc., have been extensive, and the result is that the map now published fails to represent the country in many places. It is on such accounts questionable whether it is advisable to make so expensive maps as this (it cost \$5.00 per acre) for general purposes, or of extended areas.

The United States Land Office has published during the year another edition of its admirable United States map, scale 40 miles to one inch. This is a great improvement in clearness over any previous issue. It has also published maps of Minnesota, Nevada, New Mexico and Montana upon a scale of 12 miles to an inch.

Over a large part of the United States these Land Office maps, which are compiled mainly from the township plats of land surveys, are the only source of information for atlas makers.

The U. S. Hydrographic Office has engraved on copper and published during the year 67 charts of various sorts. Of these, 55 are coast charts of different parts of the earth, 10 of them representing portions of our coast, and 45 relating to foreign coasts. Besides these, many charts of a general character have been published, mainly by lithography. Among them are the Pilot charts of the North Atlantic, issued monthly; of the North Pacific, issued in January and July, and a Pilot chart of the Great Lakes. These charts, besides being of the greatest value to navigators, are of special interest as illustrating the Physical Geography of the sea.

# ACCESSIONS TO THE LIBRARY,

JANUARY-MARCH, 1895.

## BY PURCHASE.

The Customs and Lore of Modern Greece, by Rennell Rodd, London, 1892, 8vo; Atlas of Ancient Egypt, Egypt Exploration Fund, London, 1894, 4to; Justus Perthes' See-Atlas, by H. Habenicht and Erwin Knipping, Gotha, 1894, 8vo; Une Française au Soudan, par Mme. Paul Bonnetain, Paris, 1894, 8vo; Ein Ausflug nach Brasilien und den La Platastaaten, von Emil Hänse, Warmbrunn i. Schl., 1895, 8vo; Zum Victoria Nyanza, von C. Waldemar Werther, Berlin, 1894, 8vo; Korea, von Ernst von Hesse-Wartegg, Dresden und Leipzig, 1895, 8vo; Western Origin of the Chinese Civilisation, by Terrien de Lacouperie, London, 1894, 8vo; Society in China, by Robert K. Douglas, London, 1894, 8vo; The Story of Australian Exploration, by R. Thynne, London, 1894, 8vo; History of India, by H. G. Keene, London, 1893, 2 vols. 8vo; Whitaker's Almanac for 1895, London, 1895, 8vo; Joyfull Newes out of the New-found Worlde, by N. Monardes, Englished by J. Frampton, London, 1596, 4to; Six Months in America, by Godfrey T. Vigne, Philadelphia, 1833, 12mo; Travels in the Central Portions of the Mississippi Valley, by H. R. Schoolcraft, New York, 1825, 8vo; Historical Account of the Protestant Episcopal Church in South Carolina, by Fred. Dalcho, Charleston, 1820, 8vo; Impressions of America, by Tyrone Power, London, 1836, 2 vols. 8vo; Geographical View of British Possessions in North America, by M. Smith, Baltimore, 1814, 18mo; Letters from Paraguay, by J. P. and W. P. Robertson, London, 1839, 3 vols. 12mo; Francia's Reign of Terror, by J. P. and W. P. Robertson, Philadelphia, 1839, 2 vols. 12mo; Historic Tales: Settlement and Progress of Pennsylvania, by J. F. Watson, Philadelphia, 1833, 12mo; History of Wyoming, by Isaac A. Chapman, Wilkesbarre, 1830, 12mo; The Reign of Francia in Paraguay, by J. R. Rengger and Longchamps, London, 1827, 8vo; The Conquest of Florida, by Theodore Irving, New York, 1868, 12mo; Romantic Passages in South Western History, by A. B. Meek, New York, 1857, 12mo; The United States and Canada, by E. W. Watkin, London, 1852, 8vo; A New American Biographical Dictionary, by T. J. Rogers, Easton, Pa., 1823, 12mo; American Antiquities, by Josiah Priest, Albany, 1838, 8vo; Travels through the Western Interior of the United States, 1808-1816, and Mexico, Elizabethtown, N. J., 1816, 8vo; History of Maine, 1602-1820, by



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la Cosa, por Antonio Vascano, Madrid, 1892, 8vo; Facsimile del Mapa-Mundi de Juan de la Cosa, Madrid, 1892, 6 sheets; Raccolta di Documenti e Studi, Parte V., Vol. II., Roma, 1894, 4to; Plano General de la Ciudad de México (México), 1880, folio; Report on the Geology, Mineralogy, Botany and Zoology of Massachusetts, by Edward Hitchcock, Amherst, 1833, 8vo; Sectional Map of Corea: 22 parts, s. l., s. a., sheets in case; Corean Map of 10 Provinces, s. l., s. a., sheet, mounted; Corean Map of Seoul, s. l., s. a., sheet, mounted; Corean outline Map of adjoining province, s. l., s. a., sheet, mounted; Admiralty Chart: Asiatic Coast, Hongkong to Kamchatka, sheet, paper; Admiralty Chart: East and West Coasts of Corea, sheet, paper; 43 photographs: Corean Embassy, Views in Corea, etc.; Les Singularitez de la France Antarctique, par André Thevet (reprint), Paris, 1878, 8vo; Cyclopædia of India, by Edward Balfour, 3d Ed., London, 1885, 3 vols. 8vo; Centenary Memorial of New Zealand, Chapman (publisher), Auckland, 1870, sq. 8vo; Queen Charlotte Islands, by Francis Poole, London, 1872, 8vo; Orientalische Reise, Beschreibung von Otto Fr. von der Gröben, Marienwerder, 1694, sq. 8vo; Expédition dans les Parties centrales de l'Amérique du Sud, par Francis de Castelnau, Paris, 1850-51, 6 vols. 8vo; Works of Capt. John Smith, 1608-1631 (Arber's reprint), Birmingham, 1884, 8vo; The White Man's Grave, Sierra Leone, by F. Harrison Rankin, London, 1836, 2 vols. 12mo; L'Afrique: Anthologie géographique, par Noël Garnier, Paris, 1894, 8vo; Au Niger, par le Commandant Péroz, Paris, 1895, 8vo; Atlas Général Vidal-Lablache, par Paul Vidal de la Blache, Paris, 1894, folio; Journal of a Landscape Painter in Corsica, by Edward Lear, London, 1870, 8vo; Forest Flora of British Burma, by S. Kurz, Calcutta, 1877, 2 vols. 8vo; Salamina, by Alex. Palma di Cesnola, London, 1884, 8vo; The Present State of Vermont, by John A. Graham, London, 1797, 8vo; An Illustrated History of the State of Indiana, by D. W. C. Goodrich and C. R. Tuttle, Indianapolis, 1876, 8vo; A System of Ancient and Mediæval Geography, by Charles Anthon, New York, 1850, 8vo; Annual Literary Index for 1894, by W. R. Fletcher and R. R. Bowker, New York, 1895, 8vo; Almanach Hachette, 1895, Paris, 1895, 8vo; Reise in das Gebiet des weissen Nil, von Th. v. Heuglin, Leipzig, 1869, 8vo; Reisen im Gebiete des blauen und weissen Nil, von Ernst Marno, Wien, 1874, 8vo; Nach den Victoriafällen des Zambesi von Eduard Mohr, Leipzig, 1875, 8vo; Le Tour du Monde: Table Alphabétique, 1860-1888, Paris, 1889, 4to; Lovell's Gazetteer of British North America, Montreal, 1895, 8vo; The Chinese, their Education, Philosophy

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*From José Nieto Aguilar, author:*

Mindanao, su Historia y Geografía, Madrid, 1894, 8vo.

*From the Naval Institute, Annapolis:*

Proceedings, Vol. 20, No. 4, 1894.

*From the Société Royale de Géographie, Antwerp:*

Bulletin 1, Tome 19, Fasc. 3.

*From the Association of Average Adjusters of the United States:*

The Lighting Colomne, or Sea Mirrour, by Peter Goos, Amsterdam, 1662, folio.

*From S. P. Avery:*

Illustrated London News Almanac in MS., with Letters, Author's Copy, Proofs, etc., London, 1846-1857, 12 vols. folio;

Forty Etchings, from Sketches made with the Camera Lucida, in North America, in 1827 and 1828, by Captain Basil Hall, Edinburgh, 1829, 4to; Petite Isographie Navale (Paris), s. a. 8vo; Le Génie de la Navigation (Ferdinand Denis), Toulon et Paris, 1847, 8vo.

*From the Instituto Geographico e Historico, Bahia :*

Bulletin, Dec., 1894.

*From the Johns Hopkins University, Baltimore :*

Circulars, Nos. 116-117.

Studies: The International Beginnings of the Congo Free State; Government of the Colony of South Carolina; The Early Relations between Maryland and Virginia; Is History Past Politics?

*From the Historische & Antiquarische Gesellschaft, Basel :*

19 Jahresbericht, 1893, '94; Mitteilungen, Neue Folge, Heft. IV und Beilage.

*From the Naturforschende Gesellschaft, Basel :*

Verhandlungen, Band 10, Heft. 2.

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Notulen, etc., Deel 31, Afl. 4; Tijdschrift voor Indische Taal-, Land-en Volkenkunde, Deel 37, Afl. 2 and 3.

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Report of work of the Agricultural Experiment Stations, 1892-93 and part of 1894; Bulletins, Department of Geology: No. 8, Geomorphogeny of the Coast of Northern California, by Andrew C. Lawson; No. 9, Analcite Diabase from San Luis Obispo Co., California, by Harold W. Fairbanks.

*From the Gesellschaft für Erdkunde, Berlin :*

Verhandlungen, 1894, Nos. 9 and 10, 1895, No. 1; Zeitschrift, Band 29, No. 5.

*From the Prussian Statistical Bureau, Berlin :*

Zeitschrift, Vierteljahrsheft III, 1894.

*From the Geographische Gesellschaft, Berne :*

XII Jahresbericht, 1893.

*From the Société de Géographie Commerciale, Bordeaux :*

Bulletins, 1894, Nos. 23-24, 1895, Nos. 1, 2, 3.

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Drift Boulders between the Mohawk and Susquehanna Rivers (reprint, New Haven), 1895, 8vo.

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Bulletin, 1894, No. 6.

*From the Société Hongroise de Géographie, Budapest :*

Bulletin, Tome 22, Fascicules 1-5.

*From the City of Buenos Aires :*

Statistique Municipale, 2 Bulletins, Oct., Nov., 1894; Dirección General de Estadística, El Comercio Exterior Argentino, 1894, No. 84.

*From the Société Khédiviale de Géographie, Cairo :*

Bulletin, No. 3, 1894.

*From Harvard University, Cambridge, Mass. :*

Annual Report, 1893-94.

*From the Field Columbian Museum, Chicago :*

Publication No. 1, An Historical and Descriptive Account of the Museum.

*From the Western Reserve Historical Society, Cleveland :*

Charter and Re-organization, 1891-92, pamphlet.

*From the Society of Natural History, Cincinnati :*

Journal, Vol. 17, No. 4.

*From the Colorado College, Colorado Springs :*

Studies: 1st, 2d, 3d and 4th, 1890-93 (4 pamphlets).

*From the Danish Academy of Sciences, Copenhagen :*

Bulletin No. 2, Mar.-May, 1894.

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Notes on the Geology of the western slope of the Sangre de Cristo Range, etc., by E. C. and P. H. van Diest; The Costilla Meteorite, by R. C. Hill; The Sampling and Measurement of Ore Bodies in Mine Examinations, by Edmund B. Kirby.

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The Scottish Geographical Magazine, Vol. 11, Nos. 1, 2 and 3.

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Sopra una speciale Trasformazione delle Projezioni Cartografiche atta alla delineazione dei Mappamondi, Roma (reprint), 1895, 8vo.

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Bollettino delle Pubblicazioni Italiane, 6 numbers.

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Bollettino, Vol. X, Fasc. 3 and 4.

*From the German Government :*

Statistik des deutschen Reichs, Vierteljahrsheft 4, 1894.

*From the Société de Géographie de Genève, Geneva :*

Le Globe, Bulletin No. 1, 1895.



*From Ginn & Co. :*

Primary Geography, by Alex. Everett Frye, Boston, 1894, 4to.

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Proceedings, Vol. 25, 1893-94.

*From the Dirección General de estadística, Guatemala :*

Censo General de la Población de la República de Guatemala, 1893.

*El Progreso Nacional, Guatemala :*

1894, Dec. 7-28; 1895, Jan. 4-25, Mar. 1.

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River Temperature, Its Daily Changes (Edinburgh), 1894, 8vo., Part 1.

*From the Koninklijk Instituut voor de Taal-, Land-en Volkenkunde van Nederlandsch-Indië, The Hague :*

Bijdragen, 6 Volg., 1st Deel, 1st Aflg.; Name-list of Members, 1895.

*From the Geographische Gesellschaft in Hamburg :*

Mittheilungen, 1891-92. Heft II.

*From the Société de Géographie Commerciale, Havre :*

Bulletin, Nov.-Dec., 1894.

*From Emil Holub, author :*

Die Engländer in Süd-Afrika, I, II, Wien, 1882, 2 parts, 8vo.; Die Südafrikanische Vogelwelt, Prag, 1882, 8vo.

*From the State Historical Society, Iowa City :*

Historical Lectures, Early Leaders in the Professions; The Amish Mennonites, Sketch of their origin, etc., by B. L. Wick.

*From the East Siberian branch of the Imperial Russian Geographical Society, Irkutsk :*

Bulletin, Vol. 25, Nos. 1, 2-3.

*From the Free Public Library, Jersey City :*

Library Record, Vol. 3, No. 12; Vol. 4, Nos. 1 and 2; Fourth Annual Report of the Trustees, 1894.

*From the Geographische Gesellschaft, Jena :*

Mitteilungen, Band 13, and Index from 1882-1893.

*From the Society of Naturalists, Kazan :*

Proceedings, Vol. 27, 6 numbers, Vol. 28, No. 1; Report, 1893-94; Review of the 25 years' work, 1869-94.

*From the Museo de La Plata, La Plata :*

Anales del Museo, 1, 2-3, 1892; Mapa de la Provincia de Catamarca (4 sheets).

*From Oscar Leal, author :*

O Amazonas, Lisboa, 1894, 8vo.; Viagem a um Paiz de Selvas, Lisboa, 1895, 8vo.

*From Jules Leclercq, author.*

À travers l'Afrique Australe, Paris, 1895, 12mo; La Golconde Africaine, Bruxelles, 1894, 8vo.

*From the Société de Géographie, Lille :*

Bulletin, Tome 22, Nos. 11, 12; Tome 23, No. 1, with supplement to July, 1894, 6 photogravures.

*From the Nebraska Historical Society, Lincoln :*

Proceedings, Vol. 1, No. 2.

*From the Comissão de Cartographia, Lisbon :*

Provincia de Moçambique, reconhecimento hydrographico da Bahia de Bazaruto, 1894; Provincia de Moçambique, reconhecimento da Barra do Limpopo, 1894; Carta da Ilha do Fogo (Cabo Verde), 1894; Planta Hydrographica do Porto da Furna (Ilha Brava), 1894.

*From the Sociedade de Geographia, Lisbon :*

Boletim, 1894, Nos. 9, 10, 11.

*From the Geographical Society, Liverpool :*

Third Annual Report of the Council, 1894.

*From the Royal Colonial Institute, London :*

Report of the Council, Annual Meeting Feb. 19th, 1895.

*From the Royal Geographical Society, London :*

The Geographical Journal, Vol. 5, Nos. 1, 2, 3.

*From the Royal Society, London :*

Proceedings, Vol. 57, 3 numbers.

*From the Royal Statistical Society, London :*

Vol. 57, Part 4, Dec., 1894.

*From the Historical Society of Southern California, Los Angeles :*

Annual Publication, 1894.

*From the Public Library, Los Angeles :*

Annual Report of the Board of Directors, and Report of Librarian, 1894.

*From the Geographische Gesellschaft, Lübeck :*

Mitteilungen, 2 Reihe, Heft. 7-8.

*From the University of Lund, Sweden :*

Acta Universitatis Lundensis, Tom. XXX, 1893-4, Parts 1, 2.

*From the Société de Géographie, Lyons :*

Bulletin, Tome 12, Liv. 8; Tome 13, Liv. 1.

*From the Sociedad Geográfica de Madrid :*

Boletín, Tomo 36, Nos. 11, 12.

*From the Geographical Society, Manchester :*

Journal, Vol. 9, Nos. 10-12.

*From the Literary and Philosophical Society, Manchester :*

Memoirs and Proceedings, Vol. 8, No. 4; Vol. 9, Nos. 1 and 2.

*From the Observatorio Meteorológico, Manila :*

Observaciones: Oct., Nov., Dic., 1893; Enero, Feb., Marzo, 1894.

*From the Société de Géographie, Marseilles :*

Bulletin, Tome 19, No. 1.

*From Rudolf Mayr, author :*

Wien-Chicago, Eine Urlaubsreise. Wien, 1894, 8vo.

*From the Observatorio Astronómico Nacional de Tacubaya, Mexico :*

Boletín, Tom. 1, No. 20.

*From the Observatorio Meteorológico Magnético Central, Mexico :*

Anuario Estadístico de la República Mexicana, 1893, Núm. 1.

*From the Minnesota Academy of Natural Sciences, Minneapolis :*

Occasional Papers, No. 1, Notes on Birds and Mammals, Philip-pines.

*From Elio Modigliani, author :*

Fra i Batacchi Indipendenti, Roma, 1892, 8vo.

*From Le Prince de Monaco :*

Sur la densité et l'alcalinité des eaux de l'Atlantique et de la Méditerranée, par M. J. Y. Buchanan, Paris (1893), 4to; Sur les Premières Campagnes Scientifiques de la Princesse Alice, par Le Prince de Monaco (Paris, 1895), 4to.

*From the Academy of Natural Sciences, Geographical Section, Moscow :*

Geography (bulletin), No. 3.

*From the Director of the Bavarian State Railways, Munich :*

Bericht über den Betrieb der kön. bayerischen Verkehrs-Anstalten, 1893.

*From the State Board of Health, Nashville :*

Bulletins, 1895, Feby. 20, Mch. 20.

*From the Tyneside Geographical Society, Newcastle-on-Tyne :*

Journal, Vol. III, No. 1.

*From Yale University, New Haven :*

Catalogue, 1894-95.

*From the Geological Survey of New Jersey :*

Map of the extinct-Lake Passaic (1893); Map showing the dis-

tribution of Intra-Morainic and Extra-Morainic Glacial Drift (1893); Map showing the direction of Glacial Striæ on the Palisade Ridge; Map of the Vicinity of Hibernia, N. J.; Annual Report of the State Geologist for the year 1893.

*From the Academy of Sciences, New York :*

LYCEUM OF NATURAL HISTORY, Proceedings, pp. 237-300; Annals, Vols. 5-9, and 11.

ACADEMY OF SCIENCES—Transactions: Vol. 2, No. 1, Vol. 11, Nos. 6, 7 and 8; Annals: Vol. 1, Nos. 1-4; Vol. 2, No. 9; Vol. 3, No. 13; Vol. 4, Nos. 8-9; Index to Vol. 7; Vol. 8, No. 1.

*From the American Museum of Natural History, New York :*

Bulletin, Vol. VI, 1894.

*From the Astor Library, New York :*

Forty-sixth Annual Report of the Trustees, 1894.

*From the Mercantile Library, New York :*

Seventy-fourth Annual Report, 1894.

*Military Service Institution, New York :*

Journal, Vol. 16, Nos. 73, 74.

*From the N. Y. State Colonization Society, New York :*

Second Report of Prof. O. F. Cook to the Board of Managers, 1894.

*From the Naval War College, Newport :*

Abstract of Course, 1894.

*From the Associação Commercial do Porto, Oporto :*

Relatorio dos Actos, etc., 1894.

*From the Orenburg Branch of the Imp. Russian Geographical Society, Orenburg :*

Bulletin No. 5, 1894.

*From the Société de Géographie, Paris :*

Bulletin, Tome 15, Trim. 3; Comptes Rendus, 1894, Nos. 18-19; 1895, Nos. 1, 2, 3, 4, 5.

*From the Société de Géographie Commerciale, Paris :*

Bulletin, Tome 17, Nos. 1, 2.

*From the Société de Topographie, Paris :*

Bulletin, Dec., 1894.

*From the Royal Geological Society of Cornwall, Penzance :*

Laws and Rules of the Royal Geological Society; Transactions, Vol. XI, Pt. 9; Eighty-first Annual Report, etc.

*From the Academy of Natural Sciences, Philadelphia :*

Proceedings of the Academy, 1894, Part 3.

*From the Franklin Institute, Philadelphia :*

Journal, Vol. 139, 1895, Jan., Feby., March.

*From the University of Pennsylvania, Philadelphia :*

Catalogue, 1894-95.

*From the College of New Jersey, at Princeton :*

Catalogue, 1894-95.

*From Jacques W. Redway, author :*

The First Landfall of Columbus (Washington), 1894, 8vo.

*From the Observatorio do Rio de Janeiro, Rio de Janeiro :*

Annuario, 1894.

*From the Ministero di Agricoltura, Industria e Commercio, Rome :*

Istruzione Secondaria e Superiore, Anno Scolastico 1891-92; Istruzione Elementare, Anno Scolastico 1892-93; Statistica delle Biblioteche, Vol. II, 1894; and Vol. I, Parte I, 1893; Statistica degli Scioperi avvenuti nell'Industria e nell'Agricoltura, 1892-93; Carta della Mortalità per Infezione Malarica, ecc. (2 sheets) (Direz., della Statistica.)

*From the Ministero degli Affari Esteri, Rome :*

Bollettino, 1894, Nos. 33, 34, 35, 36, 37; 1895, Nos. 38, 39, 40; Bollettino, 1861-1894, 34 vols.

*Rivista Geografica Italiana, Rome :*

Annata I, Fasc. 10.

*From the Società Geografica Italiana, Rome :*

Bollettino, Vol. 7, Fasc. 11-12; Vol. 8, Fasc. 1, 2, 3.

*From the Essex Institute, Salem :*

Bulletins, Vol. 26, Nos. 1-3, and Geological Map of Essex Co., Massachusetts, by J. H. Sears.

*From the Minnesota Historical Society, St. Paul :*

Collections, 1894, Vol 6, Part 3.

*From the Imperial Academy of Sciences, St. Petersburg :*

Bulletin, Vol. 1 (5th series), Nos. 1-4, Vol. 2, No. 1.

*From the Imperial Russian Geographical Society, St. Petersburg :*

Bulletin, Vol. 30, Nos. 4 and 5; Collections of Ethnography of Smolensk, Memoirs, Vol. 23; No. 2, Pt. 3, Proverbs.

*From the Sierra Club, San Francisco :*

Bulletin, Jan., 1895; Table of Elevations within the Pacific Coast.

*From the Department of Education, San José, Costa Rica :*

Boletín de las Escuelas Primarias, Año II, Num. 33, 34, 35.

*From the Inspección General de Enseñanza, San José, Costa Rica :*

Anuario, Tomo 1, 1892-93.

*La Gaceta, San José, Costa Rica :*

Año 1, Trim. 1, Nos. 2-15.

*From the Oficina Hidrográfica, Santiago de Chile :*

Chart; No. 48, Ensenada Tames.—Caleta Lautaro.

*From Gustave Schlegel, author :*

Problèmes Géographiques : Les Trois Iles enchantées, Leide, 1895, 8 vo.

*From the Swedish Government :*

30 Statistical Documents.

*From the Transbaikalian Branch of the Imperial Russian Geographical Society, Tchita :*

Tibetan Medicine (Bulletin No. 4, 1893).

*From the Académie de Toulouse, Toulouse :*

Annuaire de l'Université (1894-95); Rapport Annuel du Conseil Général des Facultés, etc.

*From the Geographische Gesellschaft, Vienna :*

Mittheilungen, Vol. 37, Nos. 10-12.

*From the Geological Institute, Vienna :*

Verhandlungen, 1894, Nos. 10-18.

*From the k. k. Naturhistorisches Hofmuseum, Vienna :*

Annalen, Band IX. Nr. 3-4, 1894.

*From the American Colonization Society, Washington :*

78th Annual Report; Liberia, Bulletin No. 6.

*From the Bureau of American Republics, Washington :*

Monthly Bulletin for Dec., 1894, Jan. and Feb., 1895; Bulletin, Nos. 54, 57, 58.

*From the Bureau of Education, Washington :*

Circular of Information, No. 1, History of Higher Education in Rhode Island; No. 2, History of Education in Maryland; Education in Alaska, 1891-92; Report on Introduction of Domesticated Reindeer into Alaska, 1894.

*From the Civil Service Commission, Washington :*

Tenth Report, July, 1892-June, 1893.

*From the Department of the Interior, Washington :*

Comprehensive Index of the Publications of the U. S. Government, 1889-93, J. G. Ames; Report regarding the Receipt, etc., of Public Documents, 1892-94; Report on Insurance Business in the United States at the 11th Census, 1890, Part 1.



*From the Department of State, Washington :*

Consular Reports, Nos. 172 and 173; List of Books, Pamphlets and Maps received at the Library of the Department of State, July-September, 1894.

*From the U. S. Fish Commission, Washington :*

Report of the Commissioner for the year ending June 30, 1892; Bulletin of the Fish Commission, Vol. 13, 1893.

*From the Hydrographic Office, Washington:*

Charts: No. 1455, Canada, British Columbia, Waters between Vancouver Island and the Mainland, Burrard Inlet and Cortes Island, including part of the Strait of Georgia; No. 1456, Canada, Ontario, Georgian Bay, Penetanguishene Harbor; No. 1457, Canada, Ontario, Georgian Bay, Killarney Harbor (Shebaonaning); No. 1458, Canada, Ontario, Georgian Bay, Owen Sound; No. 1460, Canada, Harbors in Georgian Bay: French River, Tobermory Harbor, Lion's Head Harbor, Club Harbor, McGregor Harbor, Rattlesnake Harbor; No. 1461, Canada, Ontario, Lake Huron, Georgian Bay, Approaches to Collingwood Harbor (Collingwood Harbor Soundings); No. 1464, Canada, Ontario, Lake Huron, Clapperton Channel; No. 1481, South America, Venezuela, Port Chichirivichi; No. 1482, United States Naval Stations; No. 1484, West Indies, Island of Barbuda; Pilot Charts of the North Atlantic Ocean for January, February, March and April, 1895; Pilot Charts of the North Pacific Ocean for February, March and April, 1895; H. O. Publications: No. 64, Navigation of Caribbean Sea and Gulf of Mexico, Vol. 2, 2d Ed. and Supplement No. 3; No. 73, Ed. of 1884, Newfoundland and Labrador, Supplement No. 3; Sailing Directions for Lake Michigan, Green Bay, and Straits of Mackinac; Special Notice to Mariners for the Great Lakes.

*From the Interstate Commerce Commission, Washington :*

Preliminary Report on the Income Account of Railways in the United States, to June 30, 1894.

*From the National Geographic Society, Washington :*

Magazine, Vol. 6, pp. 179-238, Dec., 1894.

*From the Navy Department, Washington :*

Notes on the Year's Naval Progress to July, 1894.

*From the Smithsonian Institution, Washington :*

Miscellaneous Collections: No. 854, Geographical Tables, prepared by R. S. Woodward; No. 969, Varieties of the Human Species, etc., by Giuseppi Sergi; No. 970, Bibliography of Aceto Acetic Ester, and its derivatives, by Paul H. Seymour; Special Publi-

cation, *Diary of a Journey through Mongolia and Tibet in 1891-92*, by William Woodville Rockhill.

*From the Weather Bureau, Department of Agriculture, Washington :*

Monthly Weather Review, September-November, 1894, with Wreck and Casualty Chart of the Great Lakes, 1894; Bulletin C, Rainfall and Snow of the United States to the end of 1891, etc., and Atlas of Charts.

*From the Wyoming Historical and Geological Society, Wilkesbarre, Pa.*

The Massacre of Wyoming, etc. With an Introductory Chapter by Rev. Horace Edwin Hayden, M.A. Wilkes-Barre, 1895.

*From the Worcester Society of Antiquity, Worcester:*

Town Records, 1822-1827.

*From the Asiatic Society of Japan, Yokohama:*

Transactions, Vol. 22, Part 2.

## TRANSACTIONS OF THE SOCIETY,

JANUARY-MARCH, 1895.

The Annual Meeting of the Society was held at Chickering Hall, Monday, January 14, 1895, at 8.30 o'clock P.M.

Vice-President Viele in the chair.

The following persons, recommended by the Council, were elected Fellows of the Society:

LEO C. DESSAR.	ERNEST GREEFF, JR.
JAMES LOEB.	WALTER A. PEASE.
CLEVELAND ABBE, JR.	OLIVER G. JENNINGS.
ALLEN M. THOMAS, M.D.	FRANCIS G. LANDON.
RICHARD N. YOUNG.	GEORGE TAYLOR.
CORNELL WOOLLEY.	FREDERICK J. WINSTON.
R. W. STEVENSON.	CHARLES T. JAMES.
ROBERT R. WILLETS.	FRANCIS M. UNDERHILL.
JAMES D. FOOT.	WALDRON B. VANDERPOEL, M.D.
CASSINO M. WICKER.	W. R. WARREN.
CHAS. AUGUSTIN STODDARD, D.D.	W. WHEELER SMITH.
CHAS. H. DANIELS.	HAMILTON F. KEAN.
MATTHEW HALE.	EDSON BRADLEY.
M. D. WOODFORD.	EMIL L. BOAS.
A. L. WASHBURNE.	CHAS. HARE HUTCHINSON.
JOHN K. FARWELL.	WALTER D. STARR.
A. FILLMORE HYDE.	WM. HENRY RUSSELL.
ROBERT C. SANDS.	EWALD MOMMER.
CARLETON W. NASON.	CARL PICKHARDT.
THOS. A. REILLY.	EMERSON McMILLIN.
W. M. SHAW.	ROBERT SANFORD.
GEORGE E. MARCUS.	JAMES W. PHYFE.
MOSES L. SCUDDER.	CHAS. T. POORE, M.D.
GEO. AUSTIN MORRISON, JR.	WM. D. BISHOP.
WALDORF H. PHILLIPS.	M. H. ARNOT.
C. W. WELLS.	WM. R. BEAL.
NICHOLAS F. SEEBECK.	ROWLAND A. ROBBINS.

HENRY C. ROUSE.

The Annual Report of the Council was then presented and read:

To the American Geographical Society:

The Council respectfully submits the following Report for the year 1894:

There were during the year 116 deaths and resignations. The number of Fellows is now 1,228, of whom 295 are Life Fellows.

The property of the Society on the Boulevard and 150th Street has been sold to the Hebrew Sheltering Guardian Society for \$91,000, and the Council is now able to congratulate the Society on the flourishing condition of its finances. Besides its house, No. 11 West 29th Street, with its increasing library and collections, the Society has now invested in mortgages in Brooklyn, guaranteed by the Title Guarantee and Trust Company and yielding a net interest of  $4\frac{1}{2}$  per cent., the sum of sixty-two thousand two hundred and fifty dollars; and on deposit with the United States Mortgage Company, and yielding a net interest of 3 per cent., the sum of twenty-nine thousand seven hundred and fifty dollars.

The Society has also received from the executors of the estate of Gen. George W. Cullum the full amount of the five thousand dollars devised by Gen. Cullum for a Medal Fund, as set forth in his will in these words:

"Thirty-ninth, I give and bequeath to the American Geographical Society, in the City of New York, the sum of Five Thousand Dollars to establish a permanent fund for the purposes comprehended in the general objects of its charter, that is to say: to apply the income to procuring a die, with suitable devices and inscriptions, and to cause gold medals to be struck thereupon and presented from time to time by the said Society to those who distinguish themselves by geographical discoveries, or in the advancement of geographical science, particularly citizens of the United States of America, it being understood that the selection of the recipients of the medals shall be chosen with the assent of not less than two-thirds of the entire Council of the Society, the vote thereon to be taken by ayes and nays, which must be recorded in the proceedings of the Council. I further direct that any losses of any part of this permanent fund shall be made good by the accumulation of the income of the remainder before any further expenditures for medals shall be made. I further direct that this medal fund shall be called the Cullum Geographical Medal Fund."

This amount of five thousand dollars is now on deposit with the United States Mortgage Company at 4 per cent. interest, but the accumulation of income does not as yet warrant the Society's taking the initial steps towards carrying out the provisions of the bequest.

The cash balance in the hands of the Treasurer on the 31st of December was \$3,767.70, as appears by his report herewith submitted.

The subject of the erection of a fire-proof building for the library and collections continues to engage the attention of the Council, but the Society is not yet in a position to incur the necessary expenditure.

There were held during the year eight meetings of the Society. Papers were read: by Mr. Carl Lumholtz on the American Cave-dwellers: the Tarahumaris of the Sierra Madre; by Prof. Wm. Libbey, Jr., on his Observations in the Hawaiian Islands; by Kinza Riuge Minamoto, on Japanese Life and Customs, contrasted with those of the West; by Miss C. de Alcalá, on the Wonders of Nature and Art in Spain; by J. Stanley Brown, on the Fur Seals and the Bering Sea Arbitration; by Heli Chatelain, on the Land and People of Angola; by Dr. Lysander Dickerman, on the Condition of Woman in Ancient Egypt; and by Cope Whitehouse, on Nile Reservoirs, Natural and Artificial.

The additions to the Library number 3,151, viz.: Books 561, pamphlets and periodicals 2,174, atlases 64, maps and charts 347, relief maps 5.

All of which is respectfully submitted.

NEW YORK, Jan'y 5, 1895.

WILLIAM REMSEN,  
Chairman.

The Report of the Treasurer was then presented and read:

NEW YORK, January 1, 1895.

To the AMERICAN GEOGRAPHICAL SOCIETY:

The Treasurer respectfully reports the following Receipts and Expenditures of the Society for the year ending December 31, 1894:

The Balance in Union Trust Co., Jan. 1, 1894, was..... \$1,281 95

The receipts have been:

Dues.....	\$9,195 10	
Interest.....	647 00	
Sale of Publications.....	122 00	
Rents.....	4,000 00	
		\$13,964 10
There has also been received from the <i>Estate of Gen. Cullum</i> the balance of the Medal Fund.....		1,750 00
Interest on Cullum Medal Fund.....		279 49
From the Hebrew Sheltering Guardian Society, proceeds of sale of real estate at 150th Street and the Boulevard.....		91,000 00
		<u>\$108,275 54</u>

The expenditures have been:

House account.....	\$395 15	
Salaries.....	5,065 66	
Library.....	1,420 79	
Lectures.....	1,297 40	
Publications.....	1,918 29	
Stationery and Postages.....	548 09	
Insurance.....	8 55	
Legal Expenses.....	48 50	
Miscellaneous.....	55 41	
There has also been deposited in the U. S. Mortgage Co. on acc't of Cullum Medal Fund, at 4 per cent..	1,750 00	
Deposited in the U. S. Mortgage Co., on account of Building Fund, at 3 per cent.....	29,750 00	
Paid Title Guarantee and Trust Co. for guaranteed mortgages on property in Brooklyn.....	62,250 00	
		104,507 84
There remains on deposit in the Union Trust Co., January 1, 1895.....		<u>\$3,767 70</u>

NEW YORK, January 1, 1895.

W. R. T. JONES,  
Treasurer.

The Committee charged with the duty of selecting candidates for the offices to be filled reported the following names:

To the AMERICAN GEOGRAPHICAL SOCIETY:

The Committee appointed by the Council, December 1, 1894, to nominate

suitable persons to fill the offices which become vacant in January, 1895, respectfully recommend the election of the following gentlemen :

*For President*—Chas. P. Daly, LL.D., term to expire January, 1896.

*For Vice-President*—Gen. Egbert L. Viele, term to expire January, 1898.

*For Treasurer*—Walter R. T. Jones, term to expire January, 1896.

*For Recording Secretary*—Anton A. Raven, term to expire January, 1898.

*For Councillors*—Levi Holbrook, Morris K. Jesup, Gustav E. Kissel, Henry Parish, Chandler Robbins, terms to expire January, 1898.

W. H. H. MOORE, Chairman,	} <i>Nominating Committee.</i>
FRANCIS M. BACON,	
AUSTEN G. FOX,	

On motion, duly seconded, Mr. Clinton Roosevelt was requested to cast the ballot for the candidates named, and they were declared duly elected.

Mr. Henry Morrison then addressed the Society on the service rendered to the nation in the month of December, 1861, by Chas. P. Daly, President of the Society, who then appeared by invitation before the Cabinet at Washington and clearly demonstrated the illegality of the seizure and transfer of the Confederate envoys, Messrs. Mason and Slidell, from the British Mail Steamer *Trent* to the United States war-vessel *San Jacinto*.

The Chairman then introduced the speaker of the evening, Prof. William Libbey, Jr., who described the observations made during a cruise along the western coast of Greenland in the summer of 1894.

On motion, the Society adjourned.

A meeting of the Society was held at the hall of the American Museum of Natural History, Seventy-seventh Street and Eighth Avenue, on Thursday, January 31, 1895, at 8.30 o'clock, P.M.

Vice-President Viele in the chair.

The chairman introduced to the Society the distinguished African traveller and explorer, Dr. Emil Holub, who delivered an address describing his discoveries and experiences in South Africa.

On motion, the Society adjourned.

A Regular Meeting of the Society was held at Chickering Hall, Fifth Avenue and Eighteenth Street, on Monday, February 11, 1895, at 8.30 o'clock, P.M.

Vice-President Viele in the chair.

The following persons, recommended by the Council, were elected Fellows of the Society:

DR. EZRA P. HOYT.

WM. H. MCCORD.

COL. MASON A. STONE.

HENRY F. QUACKENBOS, M.D.



The Chairman then introduced Wm. Elliot Griffis, D.D., who made an address on Korea and the Koreans, in the Mirror of their Language and History.

On motion, the Society adjourned.

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A Regular Meeting of the Society was held at Chickering Hall, Fifth Avenue and Eighteenth Street, on Monday, March 11, 1895, at 8.30 o'clock, P.M.

Vice-President Viele in the chair.

The following persons, recommended by the Council, were elected Fellows of the Society:

JOSEPH R. BIEN.

MURRAY A. POOLE.

VICTOR SORCHON.

The Chairman then introduced the speaker of the evening, Mr. Herbert M. Wilson, Chief Geographer of the U. S. Geological Survey, who delivered an address on the Topography and Scenery of Northern India.

On motion, the Society adjourned.

## THE GREENLAND SCIENTIFIC EXPEDITION OF 1895.

The purpose and scope of this expedition, planned by Mrs. R. E. Peary, are set forth in the following circular letters, which embody also the resolution adopted by the Council of the American Geographical Society on the 1st of December, 1894, and correspondence relating thereto with the Secretary of the Navy. The Council, on the 2d of March, 1895, voted an appropriation of one thousand dollars in aid of the expedition, to which generous contributions have been made by the American Museum of Natural History, the Brooklyn Institute of Arts and Sciences, the Newport Natural History Society, and Bowdoin College.

### CIRCULARS.

#### I.

NEW YORK, March 8, 1895.

SIR:—Your attention is respectfully called to the following:

On December 1, 1894, the Council of the American Geographical Society passed the following resolution in hearty compliance with an appeal from Mrs. Josephine D. Peary to the Society for its advisory assistance in the organization of an Expedition to ensure the return of her husband, R. E. Peary, C. E., U. S. N.:

"Whereas, R. E. Peary, C. E., U. S. N., in the year 1886 conceived a plan of reconnoissance on the Inland Ice of Greenland, and at his own expense successfully carried out the same over a distance of more than one hundred miles, proving to the scientific world that the ice cap offered an imperial road to explorers of that little-known land; and it is not to be doubted that his discovery cleared the way for Nansen's crossing of Greenland in 1888;

"And in 1891-92 he organized, at his own expense, an expedition to North Greenland, surveyed the unknown shores of Inglefield Gulf, discovered and named, on the 4th of July, 1892, Independence Bay, on the northeast coast, and determined the insularity of Greenland, and the rapid convergence of its shores above the 82d parallel of latitude; and in 1893 he equipped, still at his own expense, and conducted a third expedition to the same desolate region for the purpose of extending the work so well begun; and, when baffled by the unexampled severity of a season, which brought defeat and disaster to every Arctic enterprise of the year, releasing those of his party who preferred to return, he has remained with two volunteers to pass another year in the far North, in order to complete the explorations, which have won for him the hearty admiration of the foremost geographical authorities in every country; and all his undertakings, marked by originality in design, ability in execution, and a courage which never falters, have worthily upheld the honor of the American name;

"Therefore, The Council of the American Geographical Society, in recognition of these facts, respectfully requests the Secretary of the Navy to consider the propriety of dispatching a United States vessel to Northwest Greenland in the summer of 1895, to receive R. E. Peary, U. S. N., and his two companions, and convey them to the United States."

This resolution was sent to Washington on the 7th of December, accompanied by the following letter:

“THE AMERICAN GEOGRAPHICAL SOCIETY,  
11 WEST 29TH STREET, NEW YORK,  
December 7th, 1894.

“SIR:—I beg leave to submit to you the enclosed resolutions unanimously passed by the Council of the American Geographical Society, requesting that one of the cruisers of the U. S. Navy may be sent next summer to the northwestern part of Greenland, where R. E. Peary has established his headquarters, to secure the safe return of himself and his two companions; without which he may, after completing his discoveries, be compelled to remain there for an indefinite length of time, unless some whaling vessel should stop at the place, and this is uncertain.

“The resolutions were passed and are sent under the supposition that the Secretary of the Navy, if he thinks it proper, has the power to do so, and with the impression that it has been done heretofore by the Navy Department in one or two instances.

“It appears to me to be different from the fitting out of an expedition to search for an Arctic explorer who has not been heard from for a long period, which requires a large expenditure and outlay, as the search may extend over a considerable length of time, and its authorization by an Act of Congress may be necessary; but one of our cruisers may in the summer easily go through Melville Bay, which may be crossed in a day or two at that season of the year, and reach Mr. Peary's headquarters at a comparatively short distance to the north of the bay. His intention is to start next March to complete his explorations, and return next August to his starting point—Anniversary Lodge—where he will then be found, whether his discoveries are completed or not.

“It is thought by geographers throughout the world that what Mr. Peary has already done warrants the belief that Greenland, instead of being, as the distinguished German geographer Petermann supposed, a great continent, stretching across the pole, is in reality an island, the farthest northern point of which Mr. Peary has reached, and that his explorations in the coming season, which involve tracing the eastern coast for 300 miles to the highest point attained by the Danish expeditions, will finally establish this important fact.

“Most geographers are inclined to believe that the Arctic basin is surrounded by an archipelago of islands, and this, if shown to be true, will be a very important addition to our knowledge of the physical conditions that exist in the basin of the Arctic; for until we understand what is constantly taking place in that area we shall never be fully acquainted with the laws of the currents of the air and of the ocean.

“The meteorological observations which Mr. Peary has already made, and will continue to make, added to those previously recorded around the circle of the Arctic, may furnish the clew that is wanted to the full comprehension of the movements of the winds and of the waters, and this will be a valuable contribution and assistance to the labors of the Hydrographic Office of the Navy Department.

“I have great confidence in Mr. Peary's ability to achieve what he has undertaken and has already in part performed, for I think he possesses rare qualities as an explorer, and foremost among them is his power of seeing in advance what is requisite for the successful conduct of an expedition.

“Mr. Peary has become so widely known by the course of lectures which he gave throughout the United States in order to obtain the funds for his last enterprise, and so much interest has been felt by the numbers attending these lectures, that I feel assured that the sending of a cruiser to insure his safe return will be regarded by the public as a creditable act on the part of the Navy Department, which has already recognized the importance of his undertaking by granting him, on two occasions, the necessary leave of absence.

“Altogether, with the fund raised by his lectures and his own private fortune, Mr. Peary has already expended about \$60,000 in his praiseworthy efforts to extend our knowledge of the globe which we inhabit; and, as I have said, this act of attention towards him on the part of the Secretary of the Navy will meet the unqualified approval of the American people.

“I am, Sir, with high respect, your obedient servant,

CHAS. P. DALY, *President.*

“The Hon. *The Secretary of the Navy,*  
“Washington.”

On the 19th of January, 1895, a reply was received, of which the following is a copy:

"NAVY DEPARTMENT, Washington, January 18, 1895.

"SIR:—Replying to your letter of the 7th ultimo, transmitting copy of resolutions passed by the Council of the American Geographical Society, requesting that a naval vessel be sent next summer to the northwestern extremity of Greenland to bring Civil Engineer R. E. Peary, U. S. Navy, and his companions to the United States, I have to inform you that this Department has no available vessel which would be suitable to perform this duty.

"Even had the Department a suitable vessel available for such duty, no action could be taken in connection with the expedition of Mr. Peary, which is a purely private enterprise, without special authority from Congress and an appropriation to meet the necessary expenses.

"Very respectfully,

"H. A. HERBERT, *Secretary.*

"Mr. CHARLES P. DALY, *President American Geographical Society,*

"11 West 29th Street, New York City, N. Y."

It is evident that only private enterprise and generosity can be relied upon for the relief of the intrepid Peary.

It is proposed to send an expedition to accomplish this, and at the same time to further scientific research. For particulars of the proposed plan and the scope of the undertaking, with the scientific results to be expected, reference is respectfully made to the accompanying paper.

A properly equipped expedition will cost \$12,000.

The New York Life Insurance and Trust Company, 52 Wall Street, New York City, have consented to receive contributions and disburse the same on orders from the Business Manager of the expedition.

The following resolution was passed by the Council of the American Geographical Society at its meeting on March 2d, 1895: "*Resolved*, That the American Geographical Society heartily approves Mrs. Josephine Diebitsch Peary's project for the relief of Mr. Peary, and the prosecution of Arctic scientific research, and that it hereby contributes one thousand dollars towards the expenses of such expedition, provided that other subscriptions sufficient to make up the sum required to send the expedition are obtained by Mr. Diebitsch."

If you are willing to aid in equipping the proposed expedition, will you have the kindness to fill out the blank below, and return it to the Business Manager of the Greenland Scientific Expedition of 1895, as soon as possible.

EMIL DIEBITSCH,

*Business Manager of the Greenland Scientific Expedition of 1895,*

2014 Twelfth St., N. W., Washington, D. C.

In behalf of Mrs. Josephine Diebitsch Peary.

We, the undersigned, are heartily in favor of the proposed expedition, and agree to contribute the sums set opposite our respective names, it being understood that subscriptions shall not be binding until the entire amount required is subscribed, when all shall become immediately due and payable.

SUBSCRIBERS.	AMOUNT.

## 2.

## THE GREENLAND SCIENTIFIC EXPEDITION OF 1895.

Efforts are now making to raise a fund of \$12,000 for the purpose of bringing Mr. Peary and his two assistants home from Northwest Greenland early next fall, and, in connection with this, to prosecute scientific investigations during the available summer season. It is hoped, by this means, to charter and fit out a staunch steamer built for Arctic service and commanded by experienced Arctic navigators, which shall start from St. John's, Newfoundland, on or about July 5, 1895, for Inglefield Gulf, Northwest Greenland, lat. 78° N., Mr. Peary's headquarters. The co-operation of Museums, Scientific and Educational Institutions and individuals is invited, not only because they will thus assist in the return of Mr. Peary and in the preservation of the results of his extended labors, but also because such an expedition will afford the most favorable advantages to eight or ten specialists for obtaining the rich results that are possible in a prolific field that, for a generation to come, may not again be easily and economically accessible.

These Arctic waters have been traversed eight times without an accident by the four Peary expeditions, 1891-94. No Arctic authority will dispute the feasibility of carrying on the work now proposed.

If any members of the party desire to await in the vicinity of Godhavn, Disco Island, the return of the vessel, facilities will be found here for transportation to the neighboring mainland which, with its ice cap, its giant glaciers, its great sheets of overflow lavas, its abundant fossil remains and its large variety of Arctic flora and fauna, will reward research with many valuable results.

The vessel should reach the coast of Greenland by July 10 or 12, and should be able to arrive at Mr. Peary's camp late in July or early in August, if it is deemed best to make only few and short stops on the northerly trip. There will then remain four or five weeks for investigations in that exceptionally advantageous region, and still leave some time for work at more southerly points, where, owing to the influence of the East Greenland current, the conditions are unfavorable in the early part of the season. After the severe season of 1893-94 an open passage through Melville Bay and a favorable summer may reasonably be expected this year.

*Glacial Researches.*—Every scientific member of the four Peary expeditions gives his hearty endorsement of the plans for next summer's campaign. Professor T. C. Chamberlin, head Professor of Geology in the University of Chicago, and a member of the expedition of 1894, writes of the special advantages offered for glacial researches:

"The more I work upon the results gathered last summer, the more I congratulate myself upon having made the trip. The results grow constantly upon me, both in respect of their instructiveness and their fundamental importance. Surely no field is likely to be found which throws clearer light upon the problems of glaciology than the northern portion of Greenland. The facilities for study there presented are truly remarkable. The ends and sides of the glaciers are truncated, revealing their internal nature and their methods of work to a degree that could not well be anticipated."

Professor W. Libbey, Jr., Professor of Physical Geography at Princeton University, and the geographer of the Peary Auxiliary Expedition of 1894, writes:

"The careful investigation of the Greenland glaciers cannot fail to throw great light upon the discussion of the character and extent of the ice masses of the glacial epoch. The physical characteristics of the ice itself are worthy of attention because of their influence upon the motion of the ice. The contrast presented by these glaciers to the Alpine type is very great, and their study will amply reward any attention given to them."

On Bowdoin Bay in Inglefield Gulf Professor Chamberlin found, last summer, nine glaciers of varying forms and habits, within a half dozen miles. It is hardly possible to find any point north of Cape York where glaciers and ice caps profitable for study are not near at hand.

*Zoological Work.*—The study of marine life should be pursued upon a systematic plan. The results attained by the Peary Auxiliary



Expedition of 1894 clearly indicate that this work may be carried on with profit, and that large additions may be made to our knowledge of marine forms of Arctic life. Mr. C. E. Hite, of the University of Pennsylvania, a member of the Peary Auxiliary Expedition of 1892, says that the dredging results were remarkable for variety and interest. Professor Chamberlin says that in his opinion the glacial and biological lines in particular may be worked harmoniously together. Not a few of our museums desire specimens of walrus, with which these waters abound. In 1893 Mr. Peary secured over twenty of these animals in a few days' hunt. White whale, seal, narwhal, reindeer, Arctic hare, blue fox, birds of various kinds, and insects may also be procured.

*Ethnological Studies.*—The Anthropologist can hardly experience anything more instructive than first contact with the native or pure Eskimos, who, by isolation, have been preserved, in all respects, as the most primitive of human beings. They are to be found only in an almost inaccessible district of East Greenland and along the coast line, soon to be visited, between Cape York and Inglefield Gulf. Ethnological collections of great interest may be made at almost every point. The materials furnished by these people would equip a full ward in any Ethnological Museum; and here the primitive phase of developmental anthropology may be studied with the greatest advantage.

*Botanical and Other Work.*—Complete botanical studies in this region, whose flora is developed in considerable variety by the continuous sunlight of a few short months, will be of much interest. It is desired also that artistic and excellent results of photography be secured in large variety. The photographs of glaciers already brought from this region show that nothing can be more helpful to the study of these phenomena than the graphic pictures revealing every phase of glacial activity. This region will afford to all the lines of work here mentioned nearly equal opportunities and very valuable results.

A landscape painter would find here a unique and most inviting field. The scenic aspects of the Inglefield Gulf region, with its towering heights, its mighty glaciers, and its native hamlets, would enable an artist to fill his portfolio with material of great variety and interest secured within 800 miles of the North Pole.

Mr. Peary, who has done great service in opening this interesting region to scientific study, will render every aid in his power to the expedition. His thorough knowledge of the natives, of methods of travel and work, and of points of interest, will greatly facilitate

the present undertaking; and conspicuous among its results will be the fact that it will bring back, not only the fruits of its own labors, but also the product and records of the able and brilliant explorer who, for several years, has devoted all his time, energy and money to the study of Arctic life and phenomena, and to widening the bounds of geographic knowledge in the North Polar area.

The following resolution was passed by the Council of the American Geographical Society at its meeting on March 2, 1895: "*Resolved*, That the American Geographical Society heartily approves Mrs. Josephine Diebitsch Peary's project for the relief of Mr. Peary, and the prosecution of Arctic scientific research, and that it hereby contributes one thousand dollars towards the expenses of such expedition, provided that other subscriptions sufficient to make up the sum required to send the expedition are obtained by Mr. Diebitsch."

The business management of the expedition will be in the hands of the undersigned, Mr. Emil Diebitsch, who was a member of the expedition of 1894.

A limited number of Scientific Societies, Educational Institutions, or individuals, contributing \$1,000 to the fund will be entitled to have each a representative on the Expedition, who shall be approved by the scientific leader. The expenses of each member over and above \$1,000 will be the cost of his scientific outfit, transportation from his home to St. John's, and from New York or Philadelphia to his home. The proposed work will require three months.

All communications and requests for further information should be addressed to

EMIL DIEBITSCH,

*Business Manager of the Greenland Scientific Expedition of 1895,*  
2014 Twelfth St., N. W., Washington, D. C.

In behalf of Mrs. Josephine Diebitsch Peary.

WASHINGTON, March 8, 1895.

3.

2014 12TH STREET, N. W.,  
WASHINGTON, D. C., March 19, 1895.

SIR:

I would respectfully call your attention to the accompanying circular, and would particularly emphasize the following additional remarks:—

In the preparation of his Greenland expeditions Mr. Peary has always made ample provision for his return. Such was also the

case in the last expedition, and the ship arrived at headquarters last July, and brought home those of his party who wished to return.

Mr. Peary, however, felt that his plans of last spring had been defeated by the very exceptional weather which proved disastrous to nearly all expeditions that ventured into the Arctic region last summer, and determined to make another attempt to cross the ice-cap in the spring of 1895. He believed that the results which he has already achieved would insure for him the assistance of all scientific societies and individuals, and, strong in this belief, with two trusty companions, he remained at his post.

Should your society not desire to be represented on the expedition I sincerely hope that you will nevertheless make some contribution toward the fund that we may place your name on the list of patrons of this worthy enterprise.

Respectfully yours,

JOSEPHINE D. PEARY.

SIXTH INTERNATIONAL GEOGRAPHICAL CONGRESS,  
LONDON, 1895.

INVITATION CIRCULAR.

GENERAL INFORMATION.

1 SAVILE ROW, LONDON, W.

*December 5th, 1894.*

The Organising Committee of the International Geographical Congress cordially invite all Members of Geographical Societies, and all who take an interest in any of the various aspects of Geography, to attend the Meetings of the Sixth International Geographical Congress, which will be held in London from 26th July to 3rd August, 1895.

The Headquarters of the Congress are at the House of the Royal Geographical Society, 1 Savile Row, Burlington Gardens, London, W. The Society, as representing the Geographers of the United Kingdom, offers to all Members of the Congress the privileges of Fellows during their stay in London. The Rooms of the Society, including the Library and Map Room, will be open during the Congress, and officials of the Congress will be in attendance to render assistance to Members. It is hoped that arrangements may be made by which the Meetings of the Congress, as well as the Exhibition, may be held in the Imperial Institute, South Kensington. In any case interpreters will be in attendance at the meeting place to assist Members who are unfamiliar with the English language. If held at the Institute, Members of the Congress would be accorded the privileges of Honorary Members of the Imperial Institute during the Meeting, and would be able to make use of the Reading Rooms, Dining Rooms and Gardens, and to receive letters at the Institute.

A general programme, with the complete local arrangements, will be forwarded to all Members at least a month before the meeting takes place. A detailed programme for the meetings of the day will be distributed to the Members early each morning at the Reception Room. This programme and all the official documents of the Congress will be printed in French and English.

Such special information as may be considered necessary will be compiled and sent to those who signify their intention of attending the Congress, or will be given to Members on their arrival.

The following Guide Books to London are recommended as trustworthy:—

Baedeker's *London and its Environs* (English, German and French editions). 1894. 6s.

Dickens' *Dictionary of London*. 1894. 1s.

Fry, *London in 1894*. W. H. Allen & Co. 2s.

Joanne, *Londres, &c.* Hachette. 6 fr.

The Maps and Plans in Baedeker are amply sufficient. To those desirous of having a separate map the following may be recommended:—

Stanford's New Map of the County of London on the scale of 4 inches to 1 mile. 20 sheets in portfolio. 1894. 16s.

Bartholomew's Map of London. W. H. Smith, 1893. 1s.

Bartholomew's Pocket Atlas and Guide to London. John Walker. 1s.

Philip's Handy-volume Atlas of London, containing a large scale street plan (in 55 sections on a scale of 3 inches to 1 mile), &c. 1891. 7s. 6d.

Geological Map of London and its Environs. Stanford. 5s.

The Subscription payable by Members, either ladies or gentlemen, is £1 sterling. On payment of 10s. extra a Member can obtain a transferable lady's ticket, which will admit a lady to all meetings, although it does not entitle its holder to vote in the deliberations of the Congress, or to receive copies of any publications which may be distributed to Members.

Intending Members are particularly requested to intimate their intention to the Secretaries as soon as possible, in order that their names and addresses may be registered, and all subsequent communications concerning the Congress may be sent to them.

Any one may become a Member of the Congress by enclosing his name and address, with £1 sterling, to the Secretaries of the Sixth International Geographical Congress.

Subscriptions may be paid in advance, and a receipt will be sent when the money is received. The production of this receipt will entitle the holder on arrival in London to tickets for the meetings of the Congress. If more convenient, payment may be made at the Reception Room, but no person can be admitted to any meeting or to the Exhibition without a ticket.

It is hoped that special arrangements will be made with Continental and British Railways by which Members of the Congress will be conveyed to and from London at cheap rates. In order to take advantage of these arrangements it will be necessary to

show either the ticket of membership or the receipt for the subscription.

Evening Receptions, afternoon parties, and excursions to places of geographical interest are being arranged for, and when the plans are completed they will be duly announced to all who intimate their intention to be present.

*Patron.*

HER MOST GRACIOUS MAJESTY  
THE QUEEN OF GREAT BRITAIN AND IRELAND,  
EMPRESS OF INDIA.

*Vice-Patron.*

H.R.H. THE PRINCE OF WALES, K.G., K.T., K.P., &c.

*Honorary Presidents.*

H.M. THE KING OF THE BELGIANS,  
Sovereign of the Congo Free State.

H.R.H. THE DUKE OF CONNAUGHT, K.G., K.T., K.P.

H.R.H. THE DUKE OF YORK, K.G., K.T., &c.

Honorary President of the Royal Geographical Society.

*President.*

THE PRESIDENT OF THE ROYAL GEOGRAPHICAL SOCIETY.

EXECUTIVE COMMITTEE.

The PRESIDENT OF THE CONGRESS and the CHAIRMAN and SECRETARIES OF THE ORGANISING COMMITTEE are members of all Committees, and form an Executive Committee to carry out the arrangements for the Congress.

PROGRAMME OF SUBJECTS.

As intimated in a previous circular, the general heads under which the subjects to be dealt with at the Congress will be grouped are as follows:

- I. Mathematical Geography.
- II. Physical Geography, including Oceanography and Geographical Distribution.
- III. Cartography.
- IV. Exploration.
- V. Descriptive Geography.
- VI. Historical Geography.
- VII. Applied Geography, including Anthro-Geography.
- VIII. Education.

The Organising Committee, after consultation with eminent Geographers of various countries, have made definite arrangements for the treatment of certain selected subjects which they consider



of special importance. In each case the subject will be introduced by a paper by a leading authority, to be followed by a discussion in which other specialists have agreed to take part; but the discussion will in each case be open to any member. The subjects thus provisionally arranged for, and the specialists who are expected to treat them, are as follows. The names of those who have definitely promised to read papers are printed in SMALL CAPITALS; it is hoped that the others whose names are given, and from some of whom no replies have been received at the date of issue of the Circular, will at least take part in the discussions.

#### I. MATHEMATICAL GEOGRAPHY.

1. The Distribution of Density over the surface of the Earth in relation to the Force of Gravity.
2. Geodesy in relation to the Survey of India.  
General J. T. WALKER, C.B., F.R.S.
3. Photographic Methods in Surveying.  
Colonel H. C. B. TANNER.

#### II. PHYSICAL GEOGRAPHY.

1. International Co-operation for the Study of the Oceans.  
The Prince of Monaco.  
Professor Otto Krümmel.  
Professor Otto Pettersen.  
Professor Thoulet.  
Mr. J. Y. Buchanan.  
Professor Alexander Agassiz.
2. Limnology and Hydrology as a Branch of Geography.  
Professor FOREL.  
M. Delebecque.  
Professor Penck.  
M. Marinelli.  
Dr. H. R. Mill.
3. A Systematic Terminology of Land Forms.  
Professor PENCK.  
Professor W. M. Davis.  
Mr. H. J. Mackinder.  
Professor Dr. F. Freiherr von Richthofen.  
Mr. H. Yule Oldham.

#### III. CARTOGRAPHY.

1. On the Construction of Globes.  
Professor ELISÉE RECLUS.
2. REPORT of Committee on Map of the World on scale of  
1 : 1,000,000.

## IV. EXPLORATION.

## 1. The Polar Regions.

## (a.) Arctic.

Admiral A. H. MARKHAM.

## (b.) Antarctic.

Dr. NEUMAYER.

## V. DESCRIPTIVE GEOGRAPHY.

## 1. REPORT on an International Bibliography of Geography.

## VI. HISTORICAL GEOGRAPHY.

## 1. History of Early Charts and Sailing Directions.

Baron NORDENSKIÖLD.

Mr. H. Yule Oldham.

VII. APPLIED GEOGRAPHY, INCLUDING ANTHROPO-  
GEOGRAPHY.1. To what extent is Tropical Africa suited for development by  
the White Races or under their superintendence?

Sir JOHN KIRK.

Dr. Dove.

Mr. E. G. Ravenstein.

M. Lionel Dècle.

2. The Influence of Land Forms and Surface Characters on  
Occupation, Settlement and Lines of Communication.

Mr. H. J. MACKINDER.

Professor W. M. Davis.

## VIII. EDUCATION.

## Geography in the School and University.

Professor E. LEVASSEUR.

Professor Lehmann.

Mr. Douglas W. Freshfield.

These discussions will occupy only a portion of the time of the Congress, and the Committee invite contributions on other subjects indicated in the general programme. All contributions thus sent in will be most carefully considered by the Committee, and such of them as are considered suitable will be allotted a place in the programme of proceedings as far as time permits.

Even on the subjects for which definite arrangements have been made additional contributions may be sent, and these will be considered.

As the Congress is International it is proper that the subjects submitted for consideration should be of wide importance and of permanent interest.

When the Committee have definitely selected the papers to be brought before the Congress, it will be decided to what extent, if at all, the Congress will be divided into groups or sections for the purpose of holding meetings. But in any case business will be so arranged that as far as possible all the subjects for discussion and consideration will be brought before all the Members. When necessary Committees will be appointed to deal with special subjects.

It is requested that contributors of papers to the Congress will send their complete manuscript (preferably type-written) before the end of April, 1895. This must be accompanied by an abstract not exceeding in length 1500 words.

Communications intended for the Congress may be written in English, French, German or Italian. In the case of papers accepted by the Committee the abstract will be printed in English and French, for distribution among the Members of the Congress on the day on which the subject is to be introduced. The Committee reserve to themselves the right of limiting the time to be allowed to each speaker.

Having regard to the difficulties and dissatisfaction which have arisen at previous Congresses, in consequence of the short notice given of the subject of important resolutions which come up for discussion and are subsequently voted upon, it has been decided that any Member desiring to bring forward a resolution for discussion shall furnish the same in writing to the Secretaries not later than July 1st, 1895. All resolutions received in this manner, and accepted as suitable for consideration, will be printed and distributed to all Members, and the time for their discussion announced in advance.

#### PROGRAMME OF THE EXHIBITION.

It has been decided to hold an Exhibition in connection with the Sixth International Geographical Congress.

The Exhibition will include:—

- I. *Instruments.*—(1) Those designed for taking precise observations to be used in the construction of maps: (a) for the measurement of length, (b) for the measurement of arc.
- (2) Other instruments useful for various observations by travellers.
- (3) Instruments and apparatus employed in oceanographical and limnological research.
- (4) Series illustrating the history of instruments used for national surveys and by travellers and navigators.

- II. *Maps*.—(1) Historical series to show the development of cartography.
- (2) Representative series of the best existing maps: (a) Physical, (b) Geological, (c) Cadastral, (d) Military, (e) Railway and Telegraph, (f) Statistical, showing distribution of population, races, religion, natural resources, cultivation, fauna and flora, &c., (g) Educational Maps.
- (3) Historical series of Atlases.
- (4) Travellers' Field Sketches.
- [Under head (2) *specimens only and not complete series* of the various classes should be sent.]
- III. *Globes, Reliefs, Models*, and all other special appliances for use in geographical education. [Specimens only to be sent.]
- IV. *Photographs and Pictures*.
- (1) Collections of typical photographs and pictures from the geographical standpoint.
- (2) Lantern slides illustrating characteristic scenery, racial types, and industries dependent on geographical conditions.
- V. *Equipment for Travellers*, including (1) Models of tents, conveyances, camp gear, &c., for use in all climates and at all altitudes; (2) Appliances adapted for the use of travellers.
- VI. *Historical Mementoes*.—Portraits of explorers, relics of exploring expeditions, and miscellanea of interest in connection with the history of exploration.
- VII. *Publications*.—Specimens of publications of Geographical Societies, and specimens of geographical literature of special interest.
- VIII. *Collective exhibits* comprising any of the above, lent by Governments, Government Departments, Scientific Societies, or other public bodies.

The Committee desire to make the Exhibition as fully representative as possible of the present state and past history of geographical science.

It is intended that the Exhibition should be International, and it is therefore hoped that contributions will be received from all the countries taking part in the Congress.

It is hoped that among the delegates appointed by any Government one may be specially charged with the duty of superintending the collections exhibited by that country. The necessary space will, as far as possible, be provided, but the Committee regret that they are not in a position to undertake any expenses connected

with the carriage or installation of colonial and foreign exhibits. The Committee will be glad of early intimation of the character of the exhibits and the space likely to be required by any exhibitor.

In every case this information should be sent and a reply awaited, before the exhibit is despatched.

The contributions from the United Kingdom will probably be of two classes: (a) those lent by public departments, institutions, or private individuals, and (b) trade exhibits shown by the manufacturers.

(a) *Loan Exhibits.*—Expenses connected with any loan exhibits accepted by the Committee may, in certain cases, be defrayed by them; these will include freight, installation and insurance against fire. The Committee can accept no general liability in respect of loss of, or injury to, the articles shown, although the utmost care will be taken of them. The Committee must of necessity reserve absolute discretion as to the acceptance or rejection of any exhibit.

(b) *Trade Exhibits.*—The Committee hope that contributions from makers of, and dealers in, appliances, instruments and other articles of the character intended to be shown, will form an important and interesting portion of the Exhibition.

The Committee therefore wish to impress upon possible exhibitors that only articles of genuine geographical character can be admitted. For such articles they will provide as much space as may be available. The Committee will be sole judges of the suitability of any exhibit. All expenses connected with freight and installation, &c., of such goods must be paid by the exhibitors.

A Catalogue of the Exhibition will be published, in which a limited number of advertisements will be admitted.

As soon as further information is available as to the locality and area of the Exhibition, a special Exhibition circular will be published. In the meantime all communications should be addressed to—

THE SECRETARIES,

International Geographical Congress,

1 Savile Row, London, W.,

and marked *Exhibition* on the outside of the envelope.

In order that the meeting of the Congress should be useful and successful, it is necessary that the regulations as to the contribu-

tion of papers to be read, of resolutions to be discussed, and as to the arrangements for the Exhibition, be rigidly adhered to.

By authority of the Organising Committee,

LEONARD DARWIN,

*Chairman of Committee.*

J. SCOTT KELTIE, }  
HUGH ROBERT MILL, } *Secretaries.*

5th December, 1894.

